

**RCA TUBE
HANDBOOK
HB-3**

**RECEIVING
TUBE
SECTION—Part 2**

Type 6A3 and beyond



In this section, data are given for those types of RCA tubes employed primarily in broadcast and home-television receivers. These types are also used in many other applications.

For further Technical Information, write to
Commercial Engineering, Tube Department,
Radio Corporation of America, Harrison, N. J.

RECEIVING TUBES—PART 2



6A3

6A3

POWER AMPLIFIER TRIODE

Filament	Coated	
Voltage	6.3	a-c or d-c volts
Current	1.0	amp.
Maximum Overall Length		5-3/8"
Maximum Seated Height		4-3/4"
Maximum Diameter		2-1/16"
Bulb		ST-16
Base		Medium 4-Pin
Pin 1-Filament		Pin 3-Grid
Pin 2-Plate		Pin 4-Filament
Mounting Position		Any



BOTTOM VIEW (4D)

SINGLE-TUBE AMPLIFIER*Typical Operation and Characteristics - Class A₁ Amplifier:*

Plate	250 max.	volts
Grid*	-45	volts
Plate Cur.	60	ma.
Amp. Factor	4.2	
Plate Res.	800	ohms
Transcond.	5250	μmho
Load Res.	2500	
Second Har. Dist.	5	%
Power Output	3.2	watts

PUSH-PULL AMPLIFIER*Unless otherwise specified, values are for two tubes.**Typical Operation:*

	<u>Fixed Bias</u>	<u>Cathode-Bias</u>
Plate	325 max.	325 max. volts
Grid*	-68	-- volts
Cathode-Bias Resistor	--	850 ohms
Zero-Sig. Plate Cur.	80	80 ma.
Load Res. (per tube)	750	1250 ohms
Effective Load Res. (plate to plate)	3000	5000 ohms
Total Har. Dist.	2.5	5.0 %
Power Output	15	10 watts

If a single 6A3 is operated cathode-biased, the cathode-biasing resistor should be 750 ohms approx.

The type of coupling used should not introduce too much resistance in the grid circuit. Transformer- or impedance-coupling devices are recommended. When the grid circuit has a resistance not higher than 0.05 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not to exceed 0.5 megohm.

* Grid voltage referred to mid-point of a-c operated filament.

Curves for the 6A3 are essentially the same as those shown for type 2A3.

May 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

Cunningham
Radiotron

RCA-6A6

6A6

CLASS B TWIN AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.8	amp.
Maximum Overall Length		4-11/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium 7-Pin
Pin 1-Heater	③ ④ ⑤	Pin 5-Grid (Triode T_1)
Pin 2-Plate (Triode T_2)	②	Pin 6-Plate (Triode T_1)
Pin 3-Grid (Triode T_2)	⑥	Pin 7-Heater
Pin 4-Cathode	① ⑦	
BOTTOM VIEW		

For convenience, one triode unit is identified as T_1 ; the other as T_2 .

For additional curves and data, see Types 6N7 and 53, and the **RESISTANCE-COUPLED AMPLIFIER CHART**. The operating conditions and characteristics of the 6A6 are identical with those of the 6N7 and 53. ←

← Indicates a change

APRIL 5, 1937

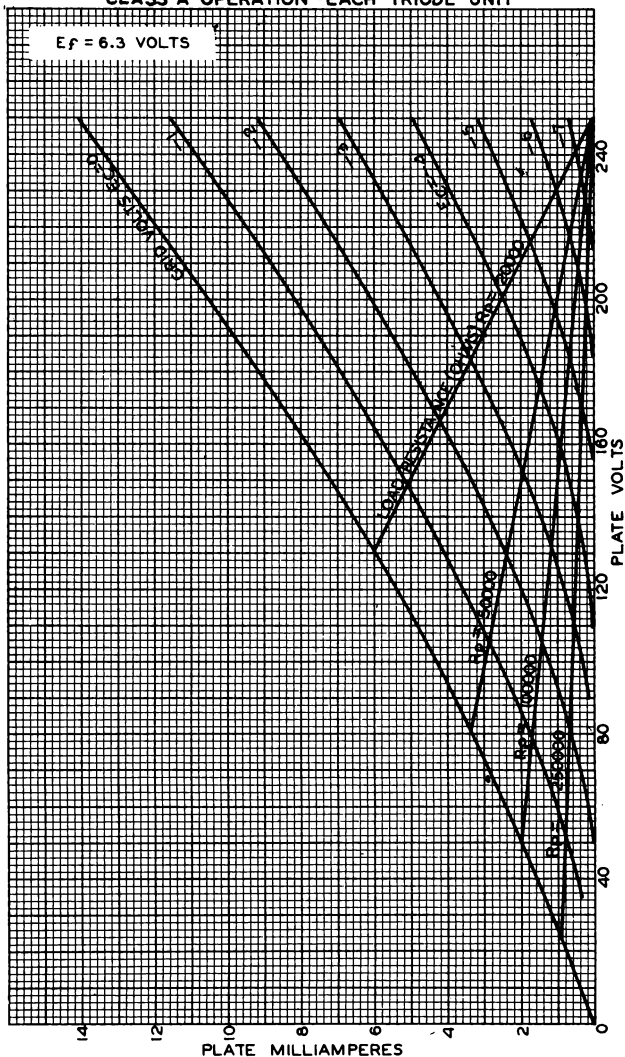
RCA RADIOTRON DIVISION
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DATA

6A6



AVERAGE PLATE CHARACTERISTICS
CLASS A OPERATION - EACH TRIODE UNIT



FEB. 5, 1935

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4375



6A7

6A7



PENTAGRID CONVERTER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:		
Grid #4 to Plate	0.3 ^o	μuf
Grid #4 to Grid #2	0.15 ^o	μuf
Grid #4 to Grid #1	0.15 ^o	μuf
Grid #1 to Grid #2	1.0	μuf
Grid #4 to All Other Electrodes (R-F Input)	8.5	μuf
Grid #2 to All Other Electrodes (Osc. Output)	5.5	μuf
Grid #1 to All Other Electrodes (Osc. Input)	7.0	μuf
Plate to All Other Electrodes (Mixer Output)	9.0	μuf
Overall Length	4-9/32" to 4-17/32"	
Seated Height	3-21/32" to 3-29/32"	
Maximum Diameter	1-9/16"	
Bulb	ST-12	
Cap	Small Metal	
Base	Small 7-Pin [▲]	
Pin 1-Heater	Pin 5-Grid #1	
Pin 2-Plate	Pin 6-Cathode	
Pin 3-Grids #3 & #5	Pin 7-Heater	
Pin 4-Grid #2	Cap -Grid #4	
Mounting Position	BOTTOM VIEW (7C)	Any



Maximum Ratings, Typical Operating Conditions, and Curves are the same as for Type 6A8.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- ° With shield-can connected to cathode.
- ▲ Requires different socket than medium 7-pin base.

← Indicates a change.

July 1, 1941

RCA RADITRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



6A7S

6A7S
6A8-G
6A8-GT**PENTAGRID CONVERTER**

RENEWAL TYPE FOR MAJESTIC RECEIVERS

Heater ■	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Overall Length	4-9/32" to 4-17/32"	
Seated Height	3-21/32" to 3-29/32"	
Maximum Diameter (without shield)	1-9/16"	
Bulb (with form-fitting shield)	ST-12	
Cap	Small Metal	
Base ▲*	Small 7-Pin	

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ Requires a different socket than the medium 7-pin base.

* Basing arrangement is the same as for the 6A7, except that the external shield on the 6A7S is connected to cathode.

Typical Operating Conditions and Curves for the 6A7S are the same as for Type 6A8.

**6A8, 6A8-G, 6A8-GT****PENTAGRID CONVERTER**

Heater ■	Coated Unipotential Cathode		
Voltage	6.3	a-c or d-c volts	
Current	0.3	amp.	
Direct Interelectrode Cap. ^o	6A8	6A8-G	6A8-GT
Grid #4 to Plate	0.06	0.26	0.26 $\mu\mu\text{f}$
Grid #4 to Grid #2	0.1	0.19	0.19 $\mu\mu\text{f}$
Grid #4 to Grid #1	0.09	0.16	0.16 $\mu\mu\text{f}$
Grid #1 to Grid #2	0.8	1.1	1.1 $\mu\mu\text{f}$
Grid #4 to All Other			
Electrodes (R-F Input)	12	9.5	9.5 $\mu\mu\text{f}$
Grid #2 to All Other Electrodes			
Except Grid #1 (Osc. Output)	5	4.6	4.6 $\mu\mu\text{f}$
Grid #1 to All Other Electrodes			
Except Grid #2 (Osc. Input)	6.5	6	6 $\mu\mu\text{f}$
Plate to All Other			
Electrodes (Mixer Output)	12	12	12 $\mu\mu\text{f}$
Overall Length	{ 3-1/8" max.	{ 4-7/32" to 4-15/32"	{ 3-5/16" max.
Seated Height	{ 2-9/16" max.	{ 3-21/32" to 3-29/32"	{ 2-3/4" max.
Maximum Diameter	1-5/16"	1-9/16"	1-5/16"
Bulb	Metal Shell, MT-8	ST-12	T-9
Cap	Miniature	Skirted Min.	{ Skirted Min. Style C

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

^o With shell of 6A8 connected to cathode, and with close-fitting shield on 6A8-G and 6A8-GT connected to cathode.

← Indicates a change.

Dec. 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

6A8
6A8-G
6A8-GT



6A8, 6A8-G, 6A8-GT

PENTAGRID CONVERTER

(continued from preceding page)

	6A8	6A8-G	6A8-GT
Base	{ Small Wafer Octal 8-Pin	{ Small Shell Octal 8-Pin	{ Small Wafer Octal 8-Pin, Sleeve
Basing Designation	8A	G-8A	GT-8A
Pin 1	{ 6A8, Shell 6A8-G, No Con. 6A8-GT, Base Sleeve		Pin 5 - Grid #1 Pin 6 - Grid #2 Pin 7 - Heater Pin 8 - Cathode Cap - Grid #4
Pin 2 - Heater			
Pin 3 - Plate			
Pin 4 - Grids #3 & #5			
Mounting Position			Any



BOTTOM VIEW

CONVERTER SERVICE

Plate Voltage		300 max. volts
Screen (Grids #3 & #5) Voltage		100 max. volts
Screen Supply Voltage		300 max. volts
Anode-Grid (Grid #2) Voltage		200 max. volts
Anode-Grid Supply Voltage		300 max. volts
Control-Grid (Grid #4) Voltage		0 min. volts
Plate Dissipation		1.0 max. watt
Screen Dissipation		0.3 max. watt
Anode-Grid Dissipation		0.75 max. watt
Total Cathode Current		14 max. ma.
Typical Operation:		
Plate Voltage	100	250 volts
Screen Voltage	50	100 volts
Anode-Grid Voltage	100	- volts
Anode-Grid Supply Voltage	-	250* volts
Control-Grid Voltage	-1.5	-3 volts
Osc.-Grid (Grid #1) Resistor	50000	50000 ohms
Plate Resistance	0.6	0.36 approx. ohms
Conversion Transconductance	360	550 μ mhos
Conver. Transcond. (approx.) with Control-Grid Bias of -20 volts	3	- μ mhos
Conver. Transcond. (approx.) with Control-Grid Bias of -35 volts	-	6 μ mhos
Plate Current	1.1	3.5 ma.
Screen Current	1.3	2.7 ma.
Anode-Grid Current	2	4 ma.
Oscillator-Grid Current	0.25	0.4 ma.
Total Cathode Current	4.6	10.6 ma.

NOTE: The transconductance of the oscillator portion (not oscillating) is 1150 μ mhos under the following conditions: plate volts, 250; screen volts, 55; control-grid volts, -2; anode-grid volts, 100; and oscillator-grid volts, -1.

* Anode-grid supply voltages in excess of 200 volts require use of 20000-ohm voltage-dropping resistor by-passed by 0.1 μ f condenser.

For Typical Circuit and Coil Design Details, refer to Type 2A7.

← Indicates a change.

Dec. 1, 1941

DATA

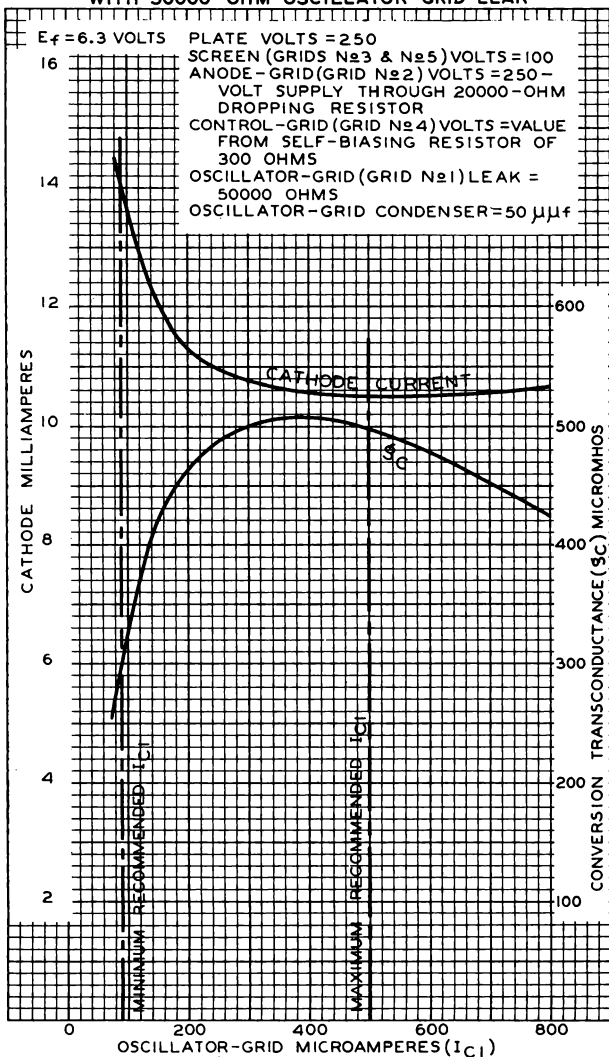
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6A8

6A8

OPERATION CHARACTERISTICS WITH 50000-OHM OSCILLATOR-GRID LEAK



DEC. 5, 1935

RCA RADIORON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4521



6AB4

HIGH-MU TRIODE

MINIATURE TYPE PARTICULARLY SUITABLE FOR CATHODE-DRIVE CIRCUITS

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.15 amp

Direct Interelectrode

Capacitances:

Without
External
ShieldWith External
Shield No. 316
Tied to CathodeGrid to Plate 1.5 $\mu\mu\text{f}$ Grid to Heater and Cathode. 2.2 $\mu\mu\text{f}$ Plate to Heater and Cathode. 0.5 $\mu\mu\text{f}$ Heater to Cathode 2.9 $\mu\mu\text{f}$ Plate to Cathode. 0.24 $\mu\mu\text{f}$ Cathode to Heater and Grid. 5.0 $\mu\mu\text{f}$ Plate to Heater and Grid. 1.7 $\mu\mu\text{f}$

Mechanical:

Mounting Position Any

Maximum Overall Length 2-1/8"

Maximum Seated Length 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip) 1-1/2" $\pm 3/32$ "

Maximum Diameter. 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

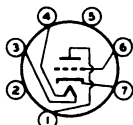
Basing Designation for BOTTOM VIEW. 5CE

Pin 1-Plate

Pin 2-Internal
Shield

Pin 3-Heater

Pin 4-Heater



Pin 5-No

Connection

Pin 6-Grid

Pin 7-Cathode

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

GRID VOLTAGE:

Negative bias value 50 max. volts

Positive bias value 0 max. volts

PLATE DISSIPATION 2.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Characteristics:

Plate Voltage 100 250 volts

Cathode-bias Resistor 270 200 ohms

Internal Shield Connected to ground

Amplification Factor. 60 60

← Indicates a change

MAY 1, 1952

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AB4



6AB4

HIGH-MU TRIODE

Plate Resistance (Approx.) . .	15000	10900	ohms
Transconductance	4000	5500	μ hos
Grid Bias (Approx.) for			
plate current of 10 μ amp. .	-5	-12	volts
Plate Current	3.7	10	ma

CURVES

for the 6AB4 are the same
as those for each unit of Type 12AT7

MAY 1, 1952

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



6AB5/6N5

ELECTRON-RAY TUBE

INDICATOR TYPE WITH TRIODE UNIT

6AB5



Heater [■]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Overall Length	3-13/16" to 4-3/16"	
Maximum Seated Height	3-9/16"	
Maximum Diameter	1-3/16"	
Bulb	T-9	
Base	Small 6-Pin	
Pin 1-Heater		Pin 4-Target
Pin 2-Plate		Pin 5-Cathode
Pin 3-Grid		Pin 6-Heater
Mounting Position	BOTTOM VIEW (6R)	Any

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

Plate-Supply Voltage	180 max. volts		
Target Voltage	{ 180 max. volts		
	{ 100 min. volts		
Typical Operation:			
Plate and Target Supply	135	135	volts
Series Triode-Plate Resistor [□]	0.25	1.0	megohm
Target Current $\uparrow^{\Delta}$	2	1.9	ma.
Triode-Plate Current ^Δ	0.5	0.13	ma.
Triode-Grid Voltage (approx.)			
For shadow angle of 0°	-10	-15.5	volts
For shadow angle of 90°	0	0	volts

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

□ Designated as R in circuit diagram under Type 6E5.

† Subject to wide variations.

Δ For triode-grid bias of 0 volts.

← Indicates a change.

April 15, 1940

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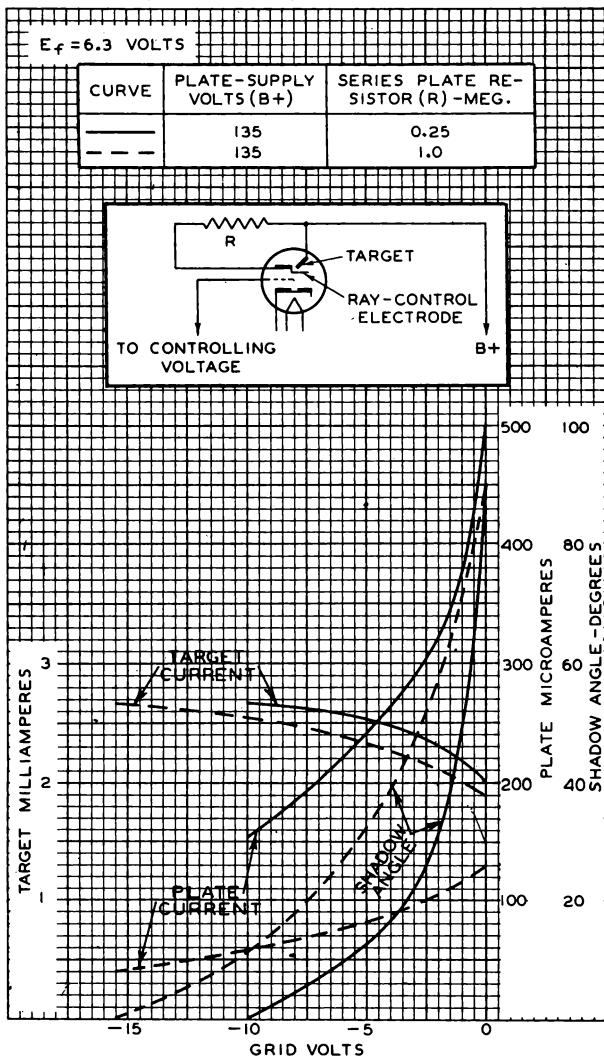
DATA

6AB5



6AB5

AVERAGE CONTROL CHARACTERISTICS



MAY 7, 1940

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4890R1



6AB7/1853

6AB7

**TELEVISION AMPLIFIER PENTODE**

SINGLE-ENDED METAL TYPE

Heater★	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.45	amp.
Direct Interelectrode Capacitances:°		
Grid to Plate	0.015 max.	μuf
Input	8	μuf
Output	5	μuf
Maximum Overall Length		2-5/8"
Maximum Seated Height		2-1/16"
Maximum Diameter		1-5/16"
Bulb		Metal Shell, MT-8
Base		Small Wafer Octal 8-Pin
Pin 1 - Shell		Pin 5 - Cathode
Pin 2 - Heater		Pin 6 - Screen
Pin 3 - Suppressor		Pin 7 - Heater
Pin 4 - Grid		Pin 8 - Plate
Mounting Position		Any



BOTTOM VIEW (8N)

AMPLIFIER

Plate Voltage	300 max.	volts
Screen Voltage	200 max.	volts
Screen-Supply Voltage	300 max.	volts
Plate Dissipation*	3.75 max.	watts
Screen Dissipation	0.65 max.	watt

*Typical Operation and Characteristics - Class A₂ Amplifier:**Condition I** Condition II***

Heater★	6.3	6.3	volts
Plate	300	300	volts
Suppressor□	0	0	volts
Screen-Supply #	200	300	volts
Series Screen Resistor	-	3000	ohms
Grid ##	-3	-3	min.volts
Plate Res.	0.7	0.7	approx.megohm
Transcond.	5000	5000	μmhos
Grid Bias for			
transcond. = 50 μmhos	-15	-22.5	volts
Plate Cur.	12.5	12.5	ma.
Screen Cur.	3.2	3.2	ma.

° with shell connected to cathode.

* Condition I is with fixed screen supply.

** Condition II is with series screen resistor.

Screen-supply voltages in excess of 200 volts require the use of a series-dropping resistor to limit the voltage at the screen to 200 volts when the plate current is at its normal value of 12.5 milli-amperes.

• May be obtained with cathode-bias resistor having a minimum value of 190 ohms.

The d-c resistance in the grid circuit should not exceed 0.25 megohm with fixed bias, or 0.5 megohm with full cathode bias and a series screen resistor.

⊙ Precautions should be taken to insure that dissipation rating is not exceeded with expected line-voltage fluctuations, especially in the case of fixed-bias operation.

□ The suppressor should be connected in r-f and i-f stages directly to ground to minimize feedback.

★ The potential difference between heater and cathode should be kept as low as possible.

Note: It is characteristic of a high gm tube to show appreciable changes of input capacitance and input conductance with plate current. In high-frequency circuits, it is necessary to take precautions to minimize this effect.

← Indicates a change.

Dec. 1, 1941

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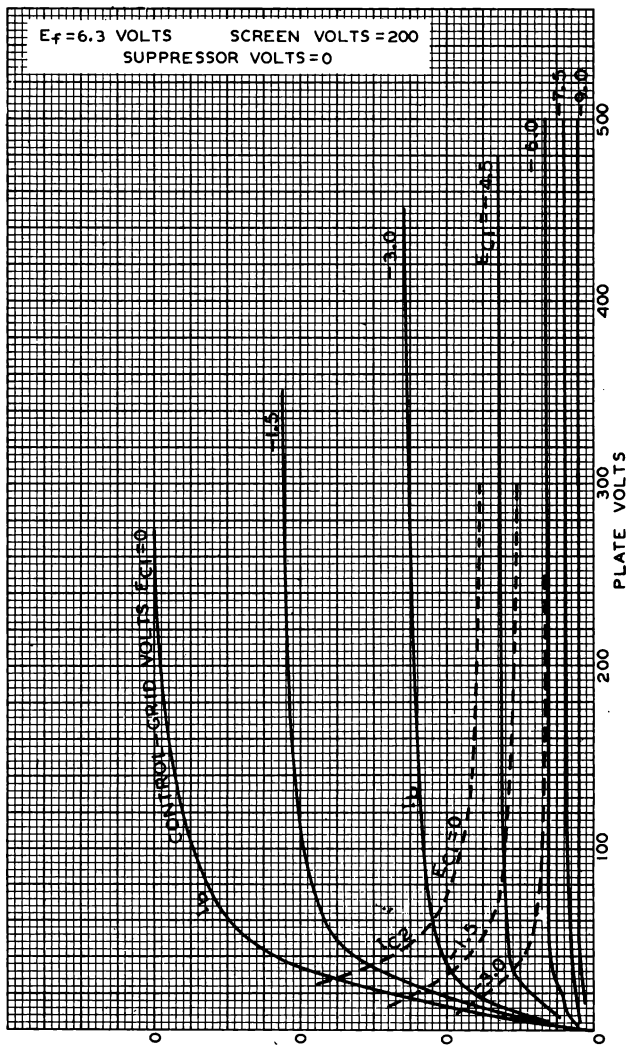
DATA

6AB7



6AB7

AVERAGE PLATE CHARACTERISTICS



JUNE 21, 1938

 RCA RADOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-6140

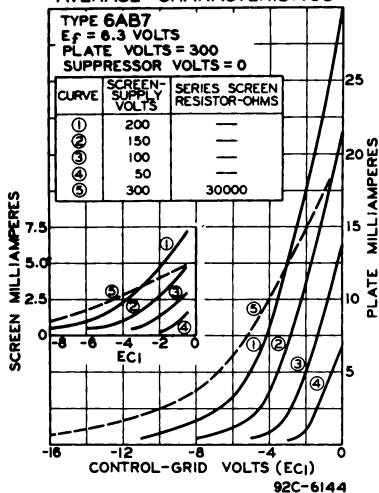


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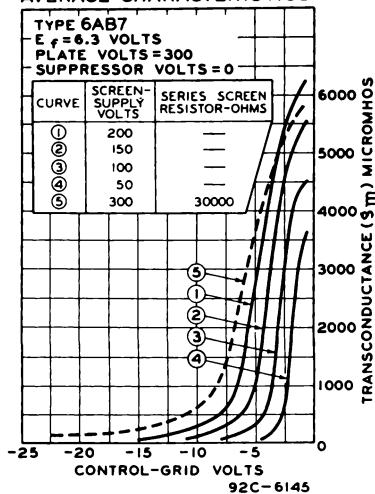
6AB7

TELEVISION AMPLIFIER PENTODE

AVERAGE CHARACTERISTICS



AVERAGE CHARACTERISTICS



April 15, 1940

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.92C-6144
92C-6145



6AC5-GT/6AC5-G

6AC5-GT



HIGH-MU POWER AMPLIFIER TRIODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.4	amp.
Maximum Overall Length		3-5/16"
Maximum Seated Height		2-3/4"
Maximum Diameter		1-5/16"
Bulb		T-9
Base		Intermed. Shell Octal 6-Pin
Pin 1 - No Connection		Pin 5 - Grid
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate		Pin 8 - Cathode
Mounting Position		Any



BOTTOM VIEW (G-6Q)

Characteristics

Plate Voltage	250 max.	volts
Grid Voltage	+13	volts
Amplification Factor	125	
Plate Resistance	36700	ohms
Transconductance	3400	μmhos
Plate Current	32	ma.
Grid Current	5	ma.

Amplifier

Plate Voltage	250 max.	volts
Peak Plate Current (per tube)	110 max.	ma.
Average Plate Dissipation	10 max.	watts

Typical Operation - Class B Power Amplifier:

Unless otherwise specified, values are for 2 tubes

Plate Voltage	250	volts
Grid Voltage	0	volts
Peak A-F Grid-to-Grid Voltage	70	volts
Zero-Signal D-C Plate Current	5	ma.
Effective Load Res. (plate to plate)	10000	ohms
Peak Power Input	950	mW.
Power Output	8 approx.	watts
<u>Dynamic-Coupled Class A₁ Amplifier - With Type 76 as Driver:</u>		
Plate-Supply Voltage	250	volts
Grid Voltage	▲	volts
Average Plate Current	32	ma.
Average Plate Current of Driver	5.5	ma.
Input Signal to Driver (RMS)	16.5	volts
Driver Grid Resistor	1.0 max.	megohm
Load Resistance	7000	ohms
Harmonic Distortion	10	%
Power Output *	3.7	watts

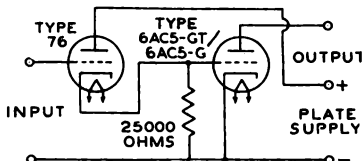
■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ Bias voltage for both the 6AC5-GT/6AC5-G and the driver is developed by the Dynamic-Coupled connection, shown in the circuit arrangement. The total d-c resistance in the grid circuit of the driver should not exceed 1.0 megohm. The main purpose of the 25000-ohm resistor is to prevent a current surge occurring while the tube is warming up.

* When driver is operated up to the grid-current point, it is possible to obtain a power output of 4.3 watts with approximately 16% distortion.

DYNAMIC-COUPLED CONNECTION

← Indicates a change.



The license extended to the purchaser of tubes appears in the license notice accompanying them. Information contained herein is furnished without assuming any obligations.

May 1, 1941

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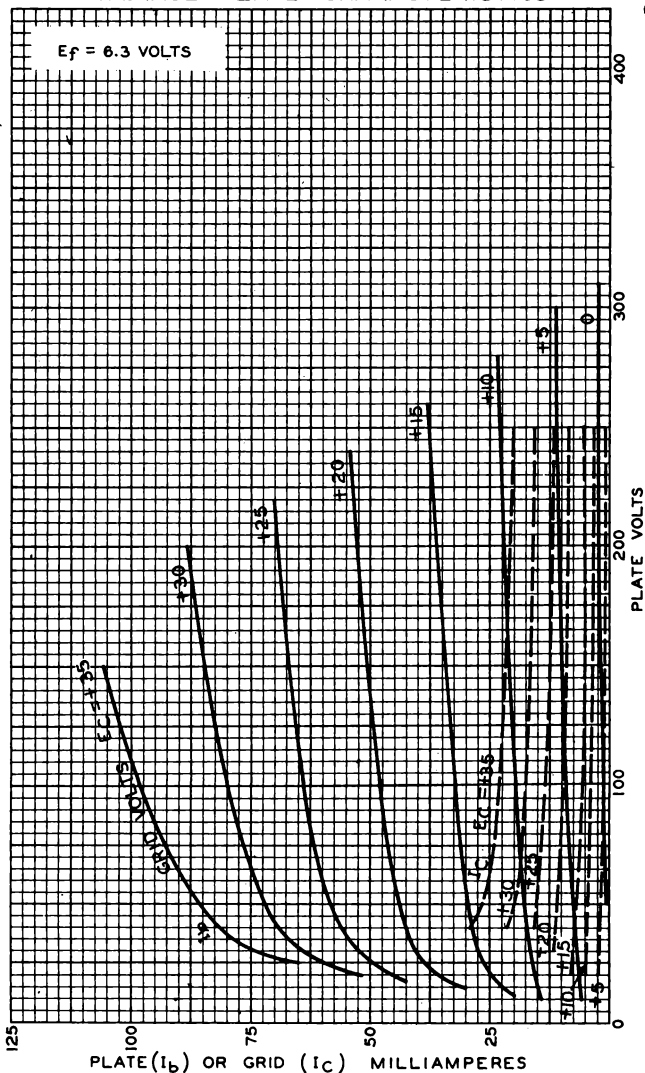
DATA

6AC5-GT



6AC5-GT

AVERAGE PLATE CHARACTERISTICS



OCT. 18, 1937

RCA RADIONRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4840



6AC7/1852

6AC7



TELEVISION AMPLIFIER PENTODE

SINGLE-ENDED METAL TYPE

Heater*	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.85	amp.
Direct Interelectrode Capacitances: ⁰		
Grid to Plate	0.015 max.	μ f
Input	11	μ f
Output	5	μ f
Maximum Overall Length		2-5/8"
Maximum Seated Height		2-1/16"
Maximum Diameter		1-5/16"
Bulb		
Base		
Pin 1 - Shell		
Pin 2 - Heater		
Pin 3 - Suppressor		
Pin 4 - Grid		
Mounting Position	BOTTOM VIEW (8N)	Any



Metal Shell, MT-8
Small Wafer Octal 8-Pin
Pin 5 - Cathode
Pin 6 - Screen
Pin 7 - Heater
Pin 8 - Plate

AMPLIFIER

Plate Voltage	300 max.	volts
Screen Voltage	150 max.	volts
Screen-Supply Voltage	300 max.	volts
Plate Dissipation	3.02 max.	watts
Screen Dissipation	0.38 max.	watt

Typical Operation and Characteristics - Class A₂ Amplifier:

Condition I* Condition II**

Plate Voltage	300	300	volts
Suppressor ⁰	0	0	volts
Screen-Supply #	150	300	volts
Screen Series Resistor	-	60000	ohms
Cathode-Bias Resistor ##	160	160	min. ohms
Plate Res.	1.0	1.0	approx. megohm
Transcond.	9000	9000	μ mhos
Plate Cur.	10	10	ma.
Screen Cur.	2.5	2.5	ma.

⁰ With shell connected to cathode.

Screen-supply voltages in excess of 150 volts require the use of a series-dropping resistor to limit the voltage at the screen to 150 volts when the plate current is at its normal value of 10 milliamperes.

* Condition I with fixed screen supply gives a sharp cut-off characteristic.

** Condition II with series screen resistor gives an extended cut-off characteristic for applications where gain is controlled by variation of grid bias.

Cathode-bias resistor should be adjusted to give a plate current of 10 ma. The d-c resistance in the grid circuit should not exceed 0.25 megohm when the screen voltage is obtained from a fixed source. When a series screen resistor is used with full cathode bias, the d-c resistance in the grid circuit may be as high as 0.5 megohm.

* The potential difference between heater and cathode should be kept as low as possible.

□ The suppressor should be connected in r-f and i-f stages directly to ground to minimize feedback.

NOTE: It is characteristic of a high gm tube to show appreciable changes of input capacitance and input conductance with plate current. In high-frequency circuits, it will be necessary to take precautions to minimize this effect. The use of the 6AC7 as a high-gain audio amplifier is not recommended unless the heater is operated from a battery source.

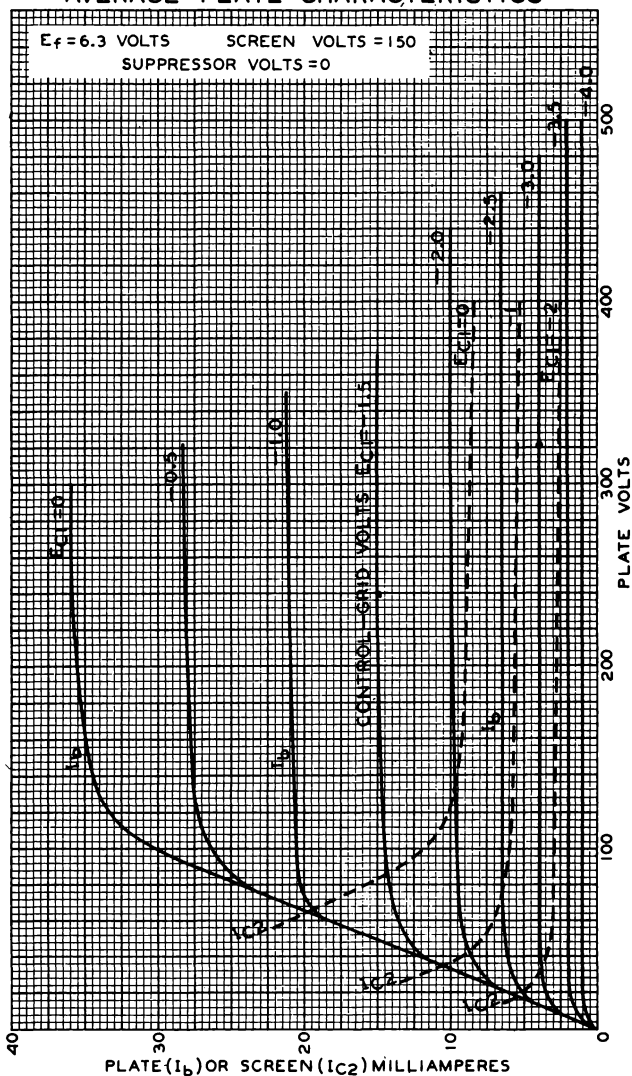
← Indicates a change.

6AC7



6AC7

AVERAGE PLATE CHARACTERISTICS



JUNE 17, 1938

 RCA RADOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

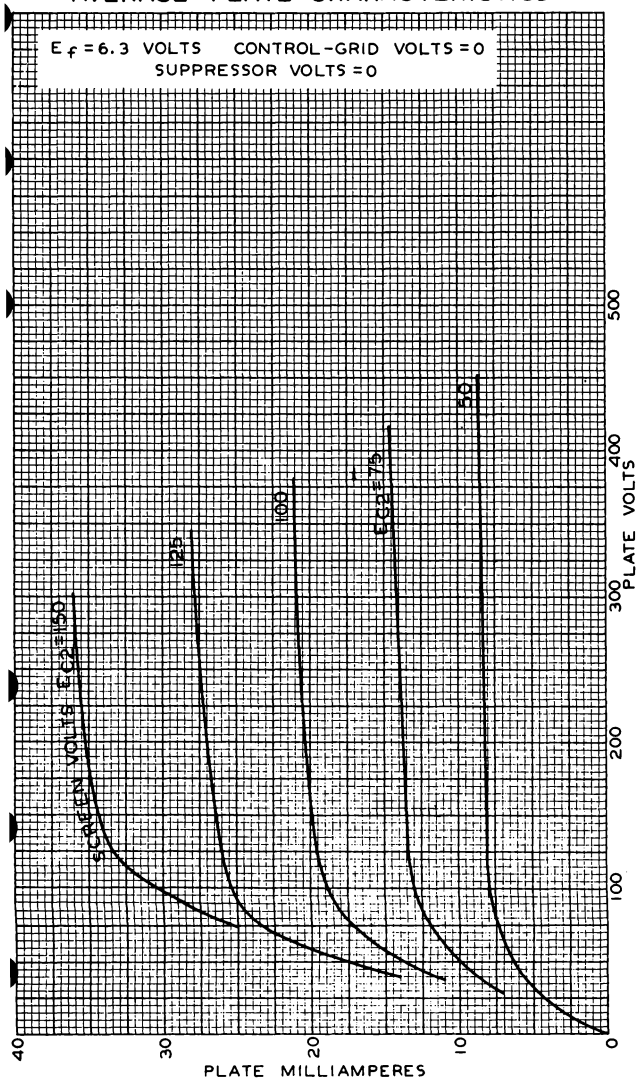
92C-6139



6AC7

6AC7

AVERAGE PLATE CHARACTERISTICS



DEC. 5 1942

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92C-6146R1

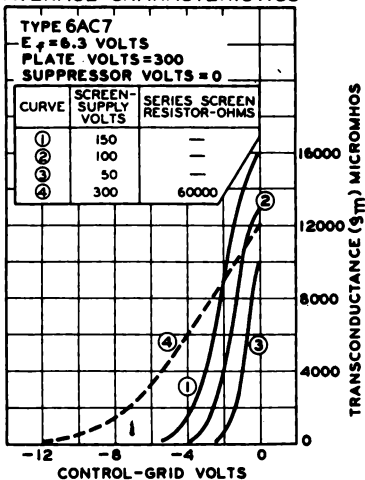
6AC7



6AC7

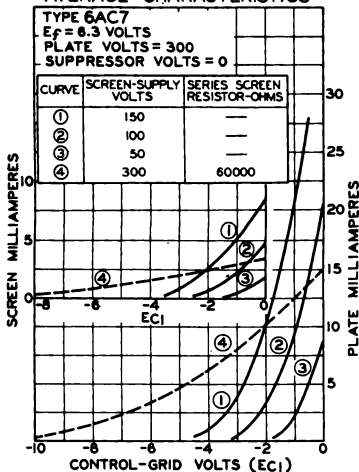
TELEVISION AMPLIFIER PENTODE

AVERAGE CHARACTERISTICS



92C-6142

AVERAGE CHARACTERISTICS



92C-6143

Jan. 1, 1943

RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92C-6142

92C-6143



6AD7-G



6AD7-G

TRIODE-POWER AMPLIFIER PENTODE

Heater	Coated Unipotential Cathode
Voltage	6.3 a-c or d-c volts
Current	0.85 amp.
Maximum Overall Length	4-5/8"
Maximum Seated Height	4-1/16"
Maximum Diameter	1-13/16"
Bulb	ST-14
Base	Medium Shell Octal 8-Pin
Pin 1-Triode Grid	Pin 5-Pentode Grid
Pin 2-Heater	Pin 6-Triode Plate
Pin 3-Pentode Plate	Pin 7-Heater
Pin 4-Pentode Screen	Pin 8-Cathode
Mounting Position	Any



BOTTOM VIEW (8AY)

TRIODE UNIT

Plate Voltage	285 max.	volts
Plate Dissipation	1.0 max.	watt
<i>Characteristics - Class A₁ Amplifier:</i>		
Plate Voltage	250	volts
Grid Voltage	-25	volts
Amp. Factor	6	
Plate Res.	19000 approx.	ohms
Transcond.	325	μmhos
Plate Current	4	ma.

PENTODE UNIT

Plate Voltage	375 max.	volts
Screen Voltage	285 max.	volts
Plate Dissipation	8.5 max.	watts
Screen Dissipation	2.7 max.	watts
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>		
Plate Voltage	250	volts
Screen Voltage	250	volts
Grid Voltage	-16.5	volts
Peak A-F Grid Voltage	16.5	volts
Zero-Sig. Plate Current	34	ma.
Max.-Sig. Plate Current	36	ma.
Zero-Sig. Screen Current	6.5	ma.
Max.-Sig. Screen Current	10.5	ma.
Plate Resistance	80000 approx.	ohms
Transconductance	2500	μmhos
Load Resistance	7000	ohms
Total Harmonic Distortion	8	%
Max.-Signal Power Output	3.2	watts

PUSH-PULL AMPLIFIER*Pentode Unit of 6AD7-G and a separate 6F6-G*

Plate Voltage	375 max.	volts
---------------	----------	-------

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

← Indicates a change.

Sept. 2, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

6AD7-G



6AD7-G

TRIODE-POWER AMPLIFIER PENTODE

(continued from preceding page)

Screen Voltage	285 max.	volts
Plate Dissipation	8.5 max.	watts
Screen Dissipation	2.7 max.	watts

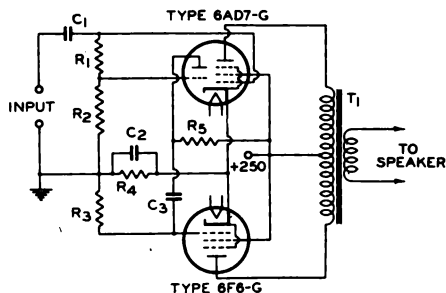
→ Typical Operation with Cathode Bias - Class AB_1 Amplifier:

Values are for pentode unit of 6AD7-G and 6F6-G together

Plate Voltage	250	285	375	volts
Screen Voltage	250	285	250	volts
Cathode Resistor	560	470	470	ohms
Peak A-F Grid to Grid Volt.	59	64	55	volts
Zero-Sig. Plate Current	36	47.5	41	ma.
Max.-Sig. Plate Current	41	54.5	50	ma.
Zero-Sig. Screen Current	6.7	8.2	6.7	ma.
Max.-Sig. Screen Current	11.7	13.7	9.2	ma.
Effec. Load Resistance (plate to plate)	14000	12000	16000	ohms
Total Harmonic Dist.	4	4	2	%
Max.-Sig. Power Output	6	8.5	9	watts

For curves of the pentode unit, refer to Type 6F6.

TYPICAL PUSH-PULL CIRCUIT WITH PHASE INVERTER USING 6AD7-G AND 6F6-G



$R_1 = 330000 \text{ OHMS}$
 $R_2 = 120000 \text{ OHMS}$
 $R_3 = 470000 \text{ OHMS}$
 $R_4 = 560 \text{ OHMS}$
 $R_5 = 150000 \text{ OHMS}$

$C_1 = 0.01 \mu f$
 $C_2 = 25 \mu f$
 $C_3 = 0.01 \mu f$

$T_1 = \text{OUTPUT TRANSFORMER};$
 PLATE-TO-PLATE LOAD, 14000 OHMS

← Indicates a change.

The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.

Sept. 2, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

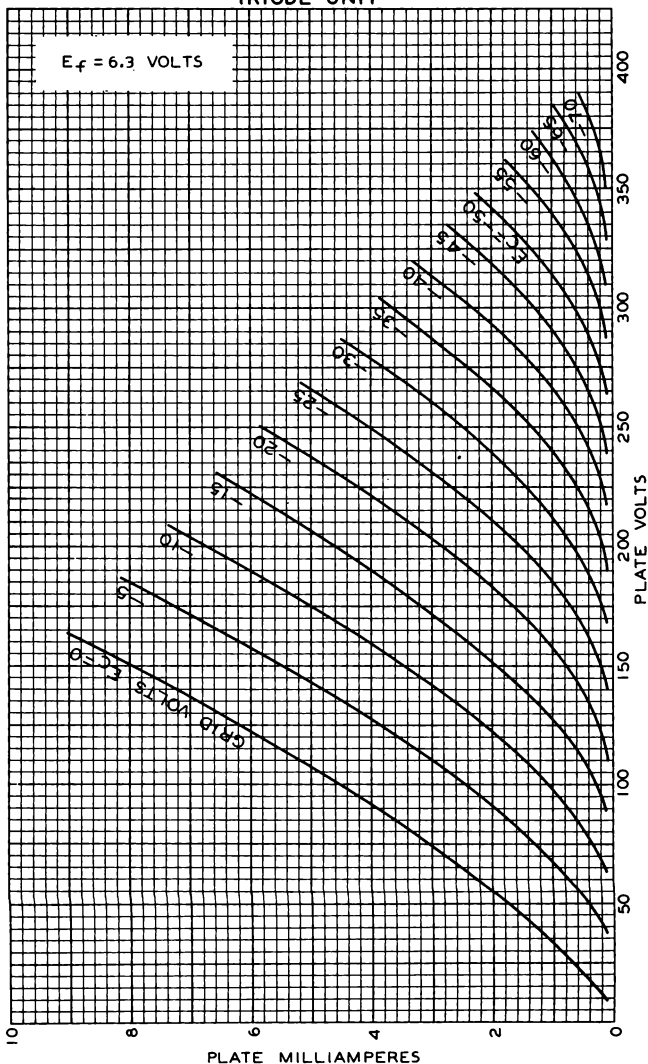
DATA



6AD7-G

6AD7-G

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



APRIL 17, 1940

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6153



6AE6-G

TWIN-PLATE CONTROL TUBE

Heater [□]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Maximum Overall Length		4-1/8"
Maximum Seated Height		3-9/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Base	Small Shell Octal 7-Pin	
Pin 1 - No Connection		Pin 4 - Plate (Sharp Cut-off Triode)
Pin 2 - Heater		Pin 5 - Grid
Pin 3 - Plate (Remote Cut-off Triode)		Pin 6 - Heater
		Pin 7 - Cathode
Mounting Position	BOTTOM VIEW (7AH)	Any

REMOTE CUT-OFF TRIODE

Plate Voltage					250 max. volts
Characteristics:					
Plate	250	250	250	250	volts
Grid	-35	-15	-6	-1.5	volts
Amp. Fact.				25	
Plate Res. (approx.)				25000	ohms
Transcond.				1000	μmhos
Plate Current	0.01	0.8*	2.8	6.5	ma.

SHARP CUT-OFF TRIODE

Plate Voltage					250 max. volts
Characteristics:					
Plate		250	250		volts
Grid		-9.5	-1.5		volts
Amp. Fact.			33		
Plate Res. (approx.)			35000		ohms
Transcond.			950		μmhos
Plate Current		0.01	4.5		ma.

[□] In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

The 6AE6-G provides in effect two triodes with different cut-off characteristics and is intended for use as a control tube for twin-type electron-ray tubes, such as the 6AF6-G. With a-c voltage applied to the common grid in suitable circuits, one ray-control electrode serves for strong signals and the other for weak signals.

April 15, 1940

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

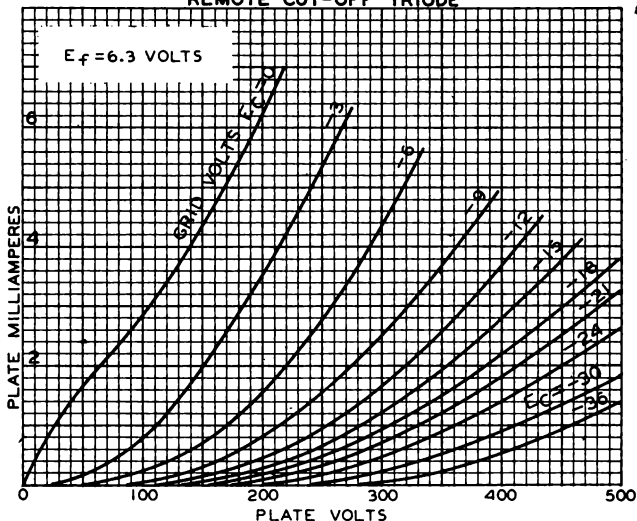
TENTATIVE DATA

6AE6-G

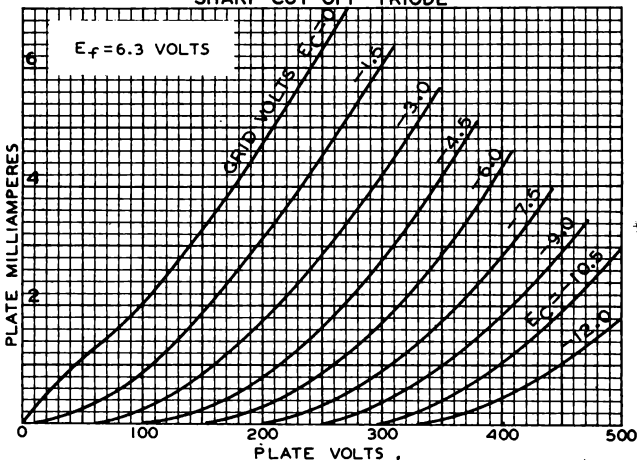


6AE6-G

AVERAGE PLATE CHARACTERISTICS REMOTE CUT-OFF TRIODE



AVERAGE PLATE CHARACTERISTICS SHARP CUT-OFF TRIODE



MAR. 18, 1940

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6138



6AF4

MEDIUM-MU TRIODE

MINIATURE TYPE

For UHF TV service

6AF4

The 6AF₄ is the same as the 6AF₄-A except for the following mechanical dimensions:

Maximum Overall Length	2-1/8"
Maximum Seated Length	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip). . .	1-1/2" $\pm 3/32$ "



6AF4-A

6AF4-A

MEDIUM-MU TRIODE

MINIATURE TYPE
For UHF TV service

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.225	amp
Resonant Frequency (Approx.)	1000	Mc
Direct Interelectrode Capacitances (No external shield):		
Grid to Plate	1.9	μf
Grid to Cathode and Heater	2.2	μf
Plate to Cathode and Heater	0.45	μf

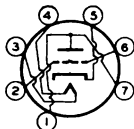
Characteristics - Class A₁ Amplifier:

Plate Voltage	80	100	volts
Cathode-Bias Resistor	150	150	ohms
Amplification Factor	15	16	
Plate Resistance	2270	2130	ohms
Transconductance	6600	7500	μmhos
Plate Current	16	20	ma

Mechanical:

Mounting Position	Any
Maximum Overall Length	1-3/4"
Maximum Seated Length	1-1/2"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/8" $\pm$ 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No. E7-1)
Basing Designation for BOTTOM VIEW	7DK

Pin 1 - Plate
Pin 2 - Grid
Pin 3 - Heater
Pin 4 - Heater



Pin 5 - Cathode
Pin 6 - Grid
Pin 7 - Plate

OSCILLATOR IN UHF TELEVISION RECEIVERS

Maximum Ratings, Design-Center Values:

DC PLATE VOLTAGE	150 max.	volts
DC GRID VOLTAGE	-50 max.	volts
DC GRID CURRENT	8 max.	ma
PLATE INPUT	2.5 max.	watts
PLATE DISSIPATION	2.25 max.	watts
DC CATHODE CURRENT	28 max.	ma
PEAK HEATER-CATHODE VOLTAGE: ♦		
Heater negative with respect to cathode	50 max.	volts
Heater positive with respect to cathode	50 [▲] max.	volts

▲, ♦: See next page.

NOV. 5, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6AF4-A



6AF4-A

MEDIUM-MU TRIODE

Typical Operation as Oscillator at 950 Mc:

DC Plate Voltage	100	volts
DC Grid Voltage	-4	volts
From a grid resistor of	10000	ohms
DC Plate Current	22	ma
DC Grid Current (Approx.)	400	μamp
Useful Power Output	160	mW

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias operation	Not recommended
For cathode-bias operation	0.5 max. megohm

♦ It is recommended that the heater be kept at cathode potential to minimize the effects of variation in the heater-to-cathode capacitance between tubes.

▲ The dc component must not exceed 25 volts.

OPERATING CONSIDERATIONS

The *mounting arrangement* should insure that the tube is held secure by its socket. Unless this recommendation is followed, the generated frequency may change by as much as 10 megacycles per second. A conventional miniature tube shield and an external clamping arrangement are recommended.

The *base pins* of the 6AF4-A fit the miniature 7-contact socket. The *socket* should be of the mica-filled, rubber, or ceramic type

NOV. 5, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

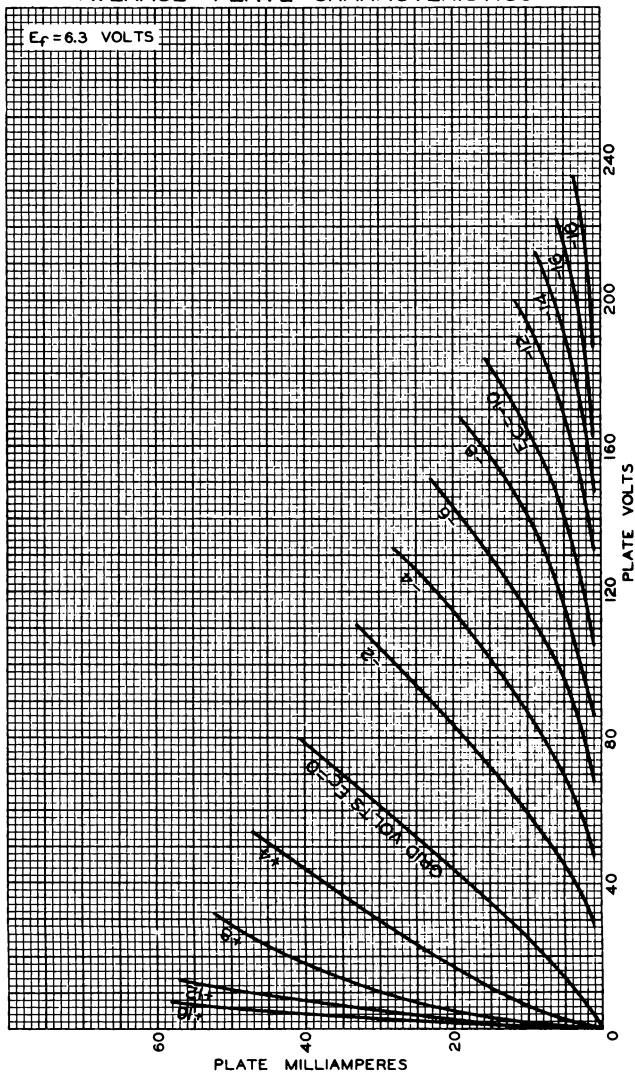
TENTATIVE DATA



6AF4-A

6AF4-A

AVERAGE PLATE CHARACTERISTICS



FEB. 20, 1952

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

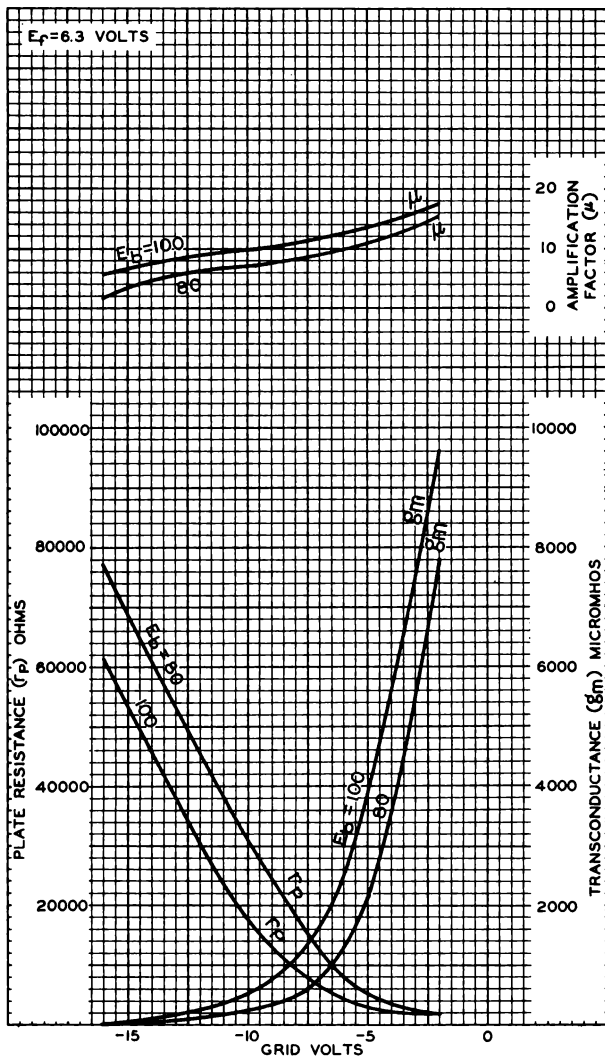
92CM-7756

6AF4-A



6AF4-A

AVERAGE CHARACTERISTICS



FEB. 26, 1952

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

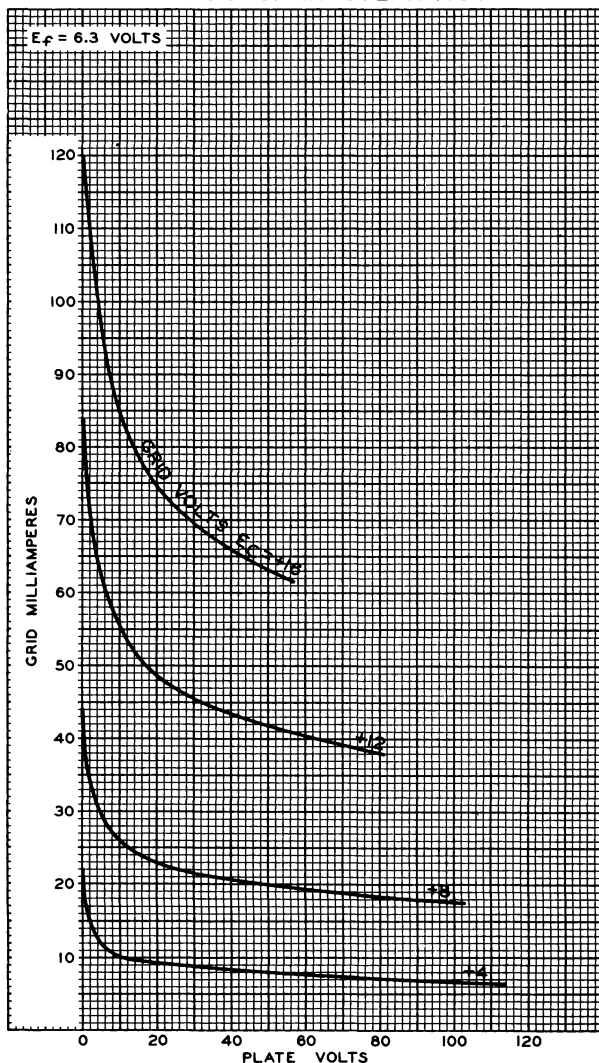
92CM-7758



6AF4-A

6AF4-A

AVERAGE CHARACTERISTICS



MAR. 19, 1952

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

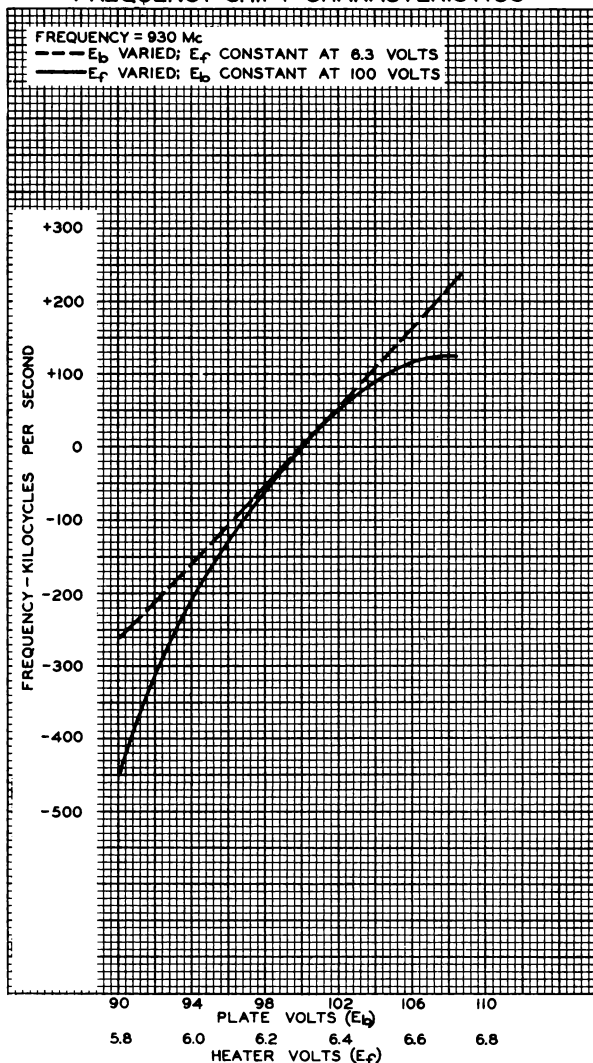
92CM-7759R1

6AF4-A



6AF4-A

FREQUENCY SHIFT CHARACTERISTICS



FEB. 29, 1952

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7762



6AF6-G

6AF6-G

ELECTRON-RAY TUBE

TWIN-INDICATOR TYPE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Overall Length	2-1/4"	{ +1/16" -1/4"
Seated Height	1-11/16"	{ +1/16" -1/4"
Maximum Diameter		1-5/16"
Bulb		T-9
Base	Intermed. Sh. Octal 7-Pin	
Pin 1 - No Connection		Pin 4 - Ray-Control
Pin 2 - Heater		Electrode, Unit No. 1
Pin 3 - Ray-Control		Pin 5 - Target
Electrode, Unit No. 2		Pin 7 - Heater
		Pin 8 - Cathode

Mounting Position

BOTTOM VIEW (7AG)

Any**

*Maximum and Minimum Ratings Are Design-Center Values*INDICATOR SERVICE

Target Voltage	{ 250 max.	volts
	{ 125 min.	volts
Ray-Control Electrode Supply Voltage	250 max.	volts
D-C Heater-Cathode Potential	90 max.	volts
Typical Operation:		
Target Voltage	125 250	volts
Series Resistor [□]	0.5 1.0	megohm
Target Current*	0.65 2.2	ma.
Ray-Control Electrode Voltage [†]	80 160	approx. volts
Ray-Control Electrode Voltage ^{††}	0 0	approx. volts

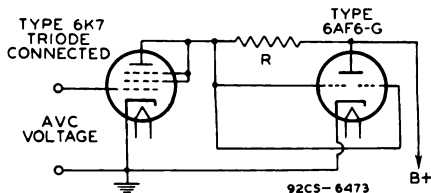
** The plane of the ray-control electrodes passes through pins No. 3 and No. 7.

□ Designated R in circuit diagram below.

* With 0 volts on ray-control electrodes. Subject to wide variations.

† For shadow angle of 0° produced by either ray-control electrode.

†† For shadow angle of 95° produced by either ray-control electrode.

**TYPICAL CIRCUIT USING TYPE 6AF6-G
WITH RAY-CONTROL ELECTRODES IN PARALLEL**

The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.

← Indicates a change.

DEC. 15, 1944

RCA VICTOR DIVISION

DATA

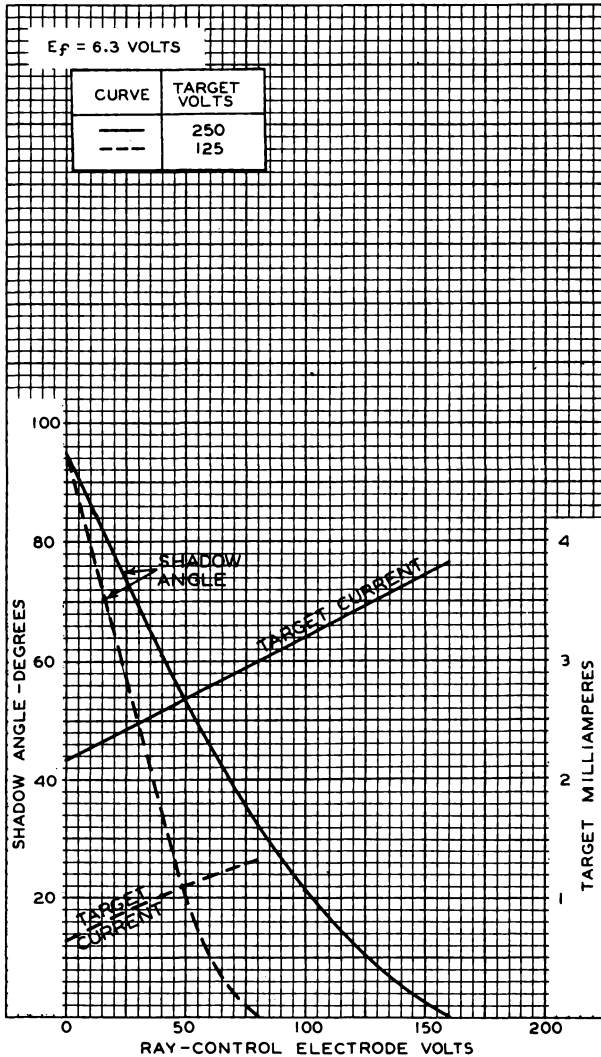
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AF6-G



6AF6-G

AVERAGE CHARACTERISTICS



SEPT. 25, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4909R1



6AG5

6AG5

SHARP-CUTOFF PENTODE

MINIATURE TYPE

Useful at Frequencies up to 400 Mc

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode

Capacitances:

Without
ShieldWith
Shield^o

Pentode Connection:

Grid No.1 to plate 0.030 max. 0.020 max. $\mu\mu\text{f}$ Grid No.1 to cathode & grid
No.3 & internal shield,
grid No.2, and heater. 6.5 6.6 $\mu\mu\text{f}$ Plate to cathode & grid
No.3 & internal shield,
grid No.2, and heater 1.8 3.1 $\mu\mu\text{f}$

Triode Connection, Grid No.2 tied to Plate:

Grid No.1 to plate and
grid No.2. 2.5 2.5 $\mu\mu\text{f}$ Grid No.1 to cathode &
grid No.3 & internal
shield, and heater 3.6 3.6 $\mu\mu\text{f}$ Plate and grid No.2 to
cathode & grid No.3 &
internal shield, and
heater 3 4.3 $\mu\mu\text{f}$

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-1/8"

Maximum Seated Length. 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip). 1-1/2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

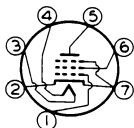
Basing Designation for BOTTOM VIEW 7BD

Pin 1 - Grid No.1

Pin 2 - Cathode,
Grid No.3,
Internal
Shield

Pin 3 - Heater

Pin 4 - Heater



Pin 5 - Plate

Pin 6 - Grid No.2

Pin 7 - Cathode,
Grid No.3,
Internal
Shield^o With external shield JETEC No.316 connected to pin No.7.

←Indicates a change.

JAN. 3, 1955

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AG5



6AG5

SHARP-CUTOFF PENTODE

AMPLIFIER - Class A₁

Pentode Connection

→ Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts
 GRID-No.2 (SCREEN) SUPPLY VOLTAGE. 300 max. volts
 GRID-No.2 VOLTAGE. See Grid-No.2 Input Rating Chart
 at front of Receiving Tube Section

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value. 0 max. volts

PLATE DISSIPATION. 2 max. watts

GRID-No.2 INPUT:

For grid-No.2 voltages up to 150 volts. 0.5 max. watt

For grid-No.2 voltages between 150

and 300 volts. See Grid-No.2 Input Rating Chart
 at front of Receiving Tube Section

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

→ Typical Operation and Characteristics:

Plate Voltage. 100 125 250 volts

Grid-No.2 Voltage. 100 125 150 volts

Cathode-Bias Resistor. 180 100 180 ohms

Plate Resistance (Approx.) 0.6 0.5 0.8 megohm

Transconductance 4500 5100 5000 μ mhos

Plate Current. 4.5 7.2 6.5 ma

Grid-No.2 Current. 1.4 2.1 2.0 ma

Grid-No.1 Voltage (Approx.)

for plate current = 10 μ amp. -5 -6 -8 voltsAMPLIFIER - Class A₁

Triode Connection - Grid No.2 Connected to Plate

→ Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value. 0 max. volts

PLATE AND GRID-No.2 DISSIPATION (TOTAL). 2.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

→ Typical Operation and Characteristics:

Plate Voltage. 180 250 volts

→ Cathode-Bias Resistor. 330 820 ohms

→ Plate Resistance (Approx.) 0.008 0.01 megohm

Amplification Factor 45 42

Transconductance 5700 3800 μ mhos

Plate & Grid-No.2 Current (Total). 7 5.5 ma

→ Indicates a change.

JAN. 3, 1955

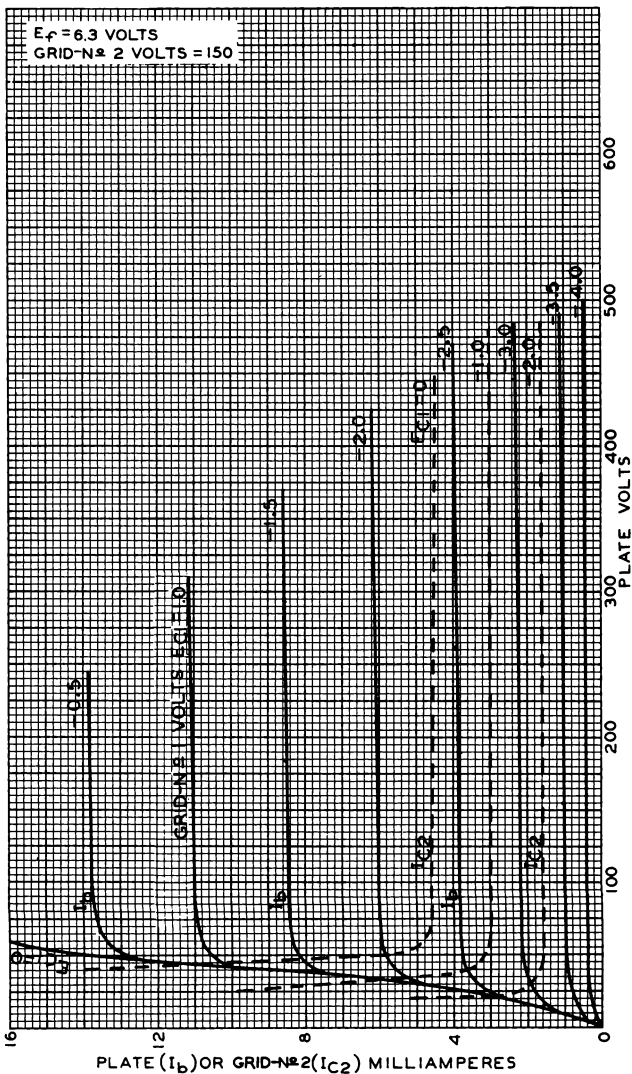
TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



6AG5

AVERAGE PLATE CHARACTERISTICS



DEC. 27, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

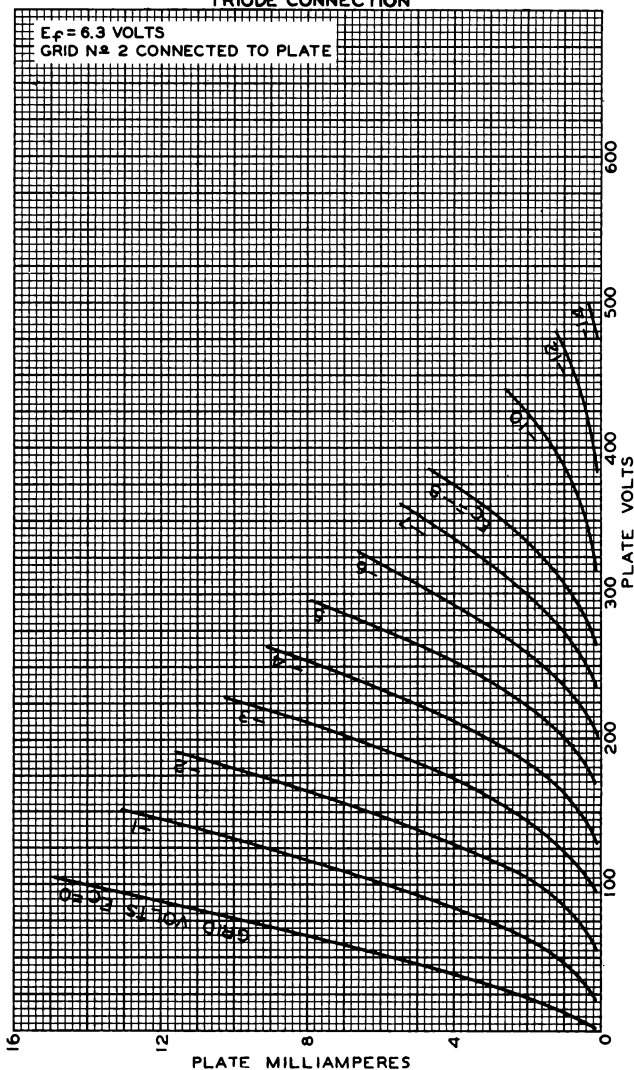
92CM-6399R2

6AG5

6AG5



6AG5 AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



DEC. 28, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM - 6464RI



6AG7

6AG7

POWER PENTODE

SINGLE-ENDED METAL TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.65 amp

Direct Interelectrode Capacitances:

With Pin No.1 and Pin No.3 connected to Pin No.5

Grid-No.1 to Plate 0.06 max. $\mu\mu\text{f}$ Input 13 $\mu\mu\text{f}$ Output 7.5 $\mu\mu\text{f}$

Characteristics, Amplifier Class A₁

Plate Voltage 300 volts

Grid-No.2 Voltage 150 volts

Grid-No.1 Voltage -3 volts

Peak AF Grid-No.1 Signal Voltage 3 volts

Zero-Signal DC Plate Current 30 ma

Max.-Signal DC Plate Current 30.5 ma

Zero-Signal DC Grid-No.2 Current 7 ma

Max.-Signal DC Grid-No.2 Current 9 ma

Plate Resistance (Approx.) 0.13 megohm

Transconductance 11000 μmhos

Load Resistance 10000 ohms

Total Harmonic Distortion 7 per cent

Max.-Signal Power Output 3 watts

Mechanical:

Mounting Position Any

Maximum Overall Length 3-1/4"

Seated Length 2-19/32" $\pm$ 3/32" ←

Maximum Diameter 1-5/16"

Bulb Metal Shell, MT-8

Base Small-Wafer Octal 8-Pin (JETEC No.B8-21)

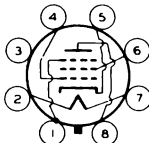
Basing Designation for BOTTOM VIEW 8Y ←

Pin 1-Shell,
Grid No.3

Pin 2-Heater

Pin 3-No
Connection

Pin 4-Grid No.1



Pin 5-Cathode

Pin 6-Grid No.2

Pin 7-Heater

Pin 8-Plate

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 300 max. volts

← Indicates a change

NOV. 1, 1952

TUBE DEPARTMENT

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY -

6AG7**6AG7****POWER PENTODE****GRID-No.1 (CONTROL-GRID) VOLTAGE:**

Positive bias value 0 max. volts

PLATE DISSIPATION 9 max. watts

GRID-No.2 INPUT 1.5 max. watts

→ **PEAK HEATER-CATHODE VOLTAGE:**

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation in 4-Mc Bandwidth Video Amplifier**Circuit of Fig. 1:****With Grid-Resistor Bias***Used where dc restoration is accomplished in grid-No.1 circuit of the 6AG7*

Plate Supply Voltage 300 volts

Grid-No.2 Voltage† 115 volts

Zero-Signal Grid-No.1 Voltage 0 volts

Grid-No.1 Resistor 0.25 to 0.5 megohm

Grid-No.1 Signal Voltage (Peak to Peak) 4 volts

Zero-Signal Plate Current 45 ma

Zero-Signal Grid-No.2 Current 13 ma

Load Resistor 3500 ohms

Voltage Output (Peak to Peak) 135 volts

With Cathode-Resistor Bias

Plate Supply Voltage 300 volts

Grid-No.2 Voltage^o 125 volts*from series resistor of 25000 ohms*

Grid-No.1 Voltage -2 volts

Cathode Resistor (Bypassed with

capacitor of 250 μ f, approx.) 57 ohms

Grid-No.1 Signal Voltage (Peak to Peak) 4 volts

Zero-Signal Plate Current 28 ma

Zero-Signal Grid-No.2 Current 7 ma

Load Resistor 3500 ohms

Voltage Output (Peak to Peak) 140 volts

Maximum Circuit Values:**Grid-No.1-Circuit Resistance:**

For fixed-bias operation 0.25 max. megohm

For cathode-bias operation 1.0 max. megohm

† obtained from supply having good regulation.

^o obtained preferably from 300-volt plate supply through resistor of value shown.

→ indicates a change

NOV. 1, 1952

TUBE DEPARTMENT**DATA 1**

— RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

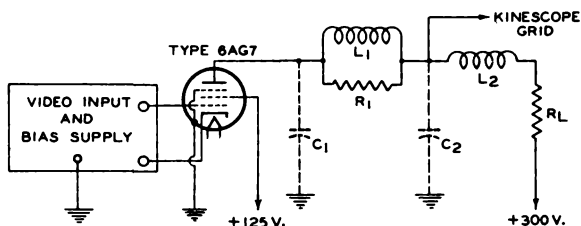


6AG7

6AG7

POWER PENTODE

Fig. 1 - Typical Video Voltage Amplifier Circuit
Having Bandwidth of 4 Mc.



$C_1 = 9.5 \mu\text{f} = \text{Tube Output Capacitance} + \text{Socket Capacitance} + \text{Wiring Capacitance} + \text{Coil Capacitance}$

$C_2 = 19 \mu\text{f} = \text{Kinescope Capacitance} + \text{Socket Capacitance} + \text{Wiring Capacitance} + \text{Coil Capacitance}$

$L_1 = 250 \mu\text{h}$ Filter Inductor

$L_2 = 125 \mu\text{h}$ Filter Inductor

$R_1 = 20000\text{-}\Omega\text{m}$, Non-Reactive Resistor

$R_L = 3500\text{-}\Omega\text{m}$, 10-Watt, Non-Reactive Resistor

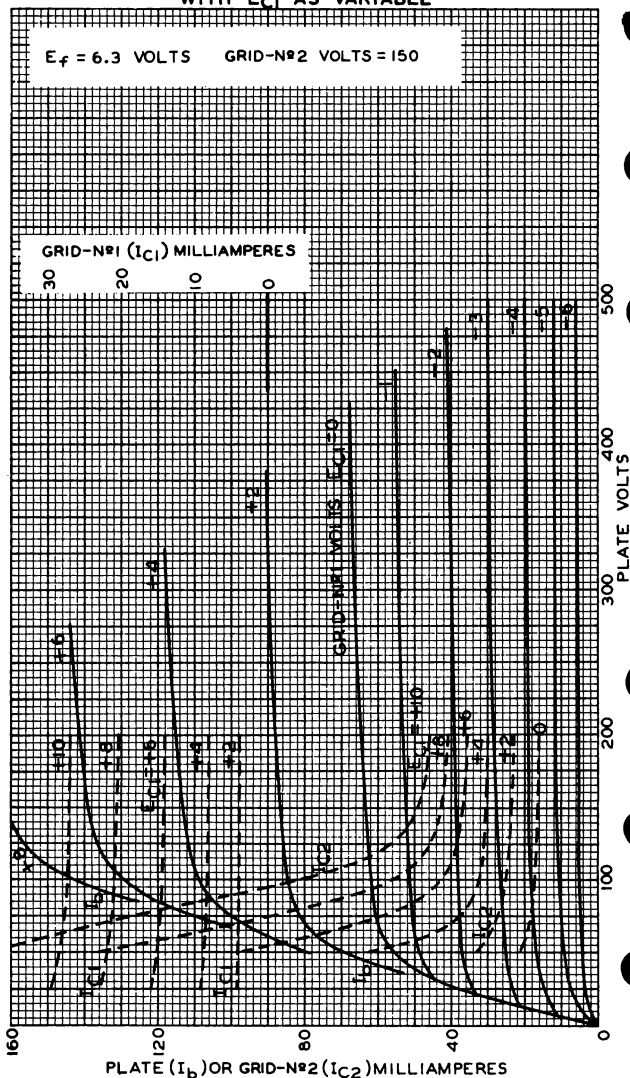
Devices and arrangements shown or described herein may use patents of RCA or others. Information contained herein is furnished without responsibility by RCA for its use and without prejudice to RCA's patent rights.

6AG7



6AG7

AVERAGE PLATE CHARACTERISTICS WITH E_{C1} AS VARIABLE



OCT. 2, 1952

TUBE DEPARTMENT
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92CM-6034R2

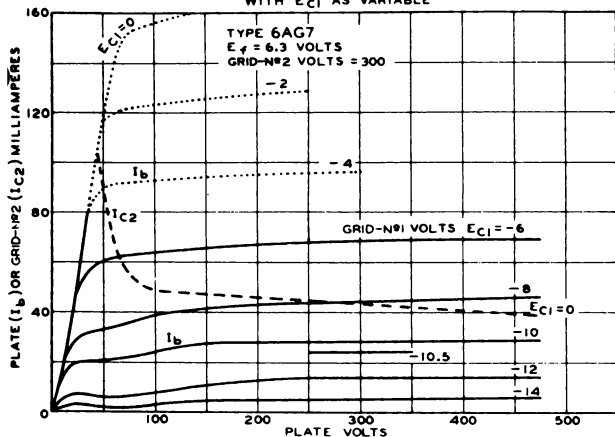


6AG7

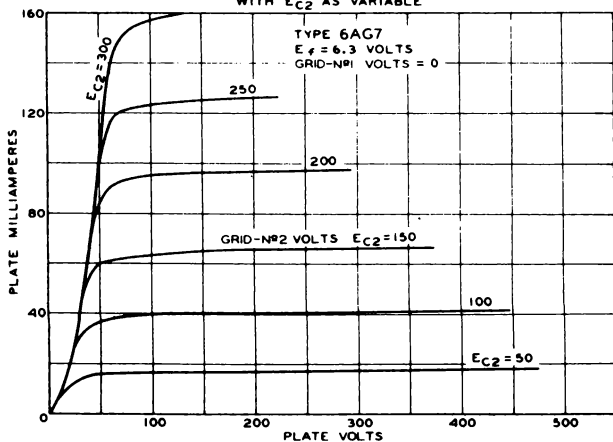
POWER PENTODE

6AG7

AVERAGE PLATE CHARACTERISTICS
WITH E_{C1} AS VARIABLE



AVERAGE PLATE CHARACTERISTICS
WITH E_{C2} AS VARIABLE



NOV. 1, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6035T1
CE-6036T1

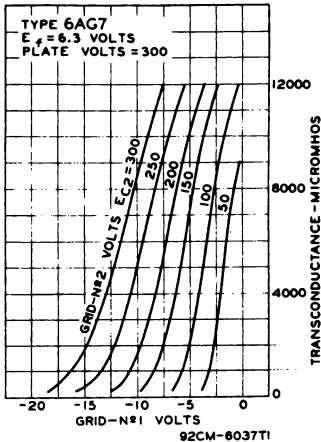
6AG7



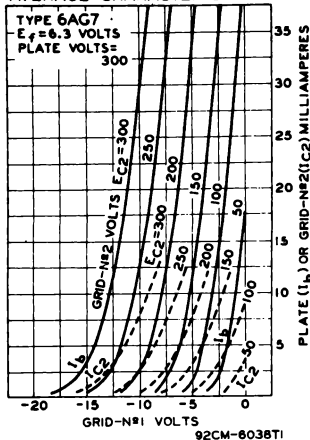
6AG7

POWER PENTODE

AVERAGE CHARACTERISTICS



AVERAGE CHARACTERISTICS



NOV. 1, 1952

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6037T1
 CE-6038T1



6AH4-GT

MEDIUM-MU TRIODE

6AH4-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.75	amp
Direct Interelectrode Capacitances (No external shield):		
Grid to Plate	4.4	μf
Input	7	μf
Output	1.7	μf

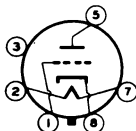
Characteristics, Amplifier Class A₁:

Plate Voltage	250	volts
Grid Voltage	-23	volts
Amplification Factor	8	
Plate Resistance	1780	ohms
Transconductance	4500	μmhos
Plate Current	30	ma
Grid Volts (Approx.) for plate current of 0.5 ma	-40	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length	2-3/4"
Maximum Diameter	1-9/32"
Bulb	T-9
Base	Short Intermediate-Shell Octal 6-Pin (JETEC No. B6-60)
Basing Designation for BOTTOM VIEW	8EL

Pin 1-Grid
Pin 2-Heater
Pin 3-No
Conn.



Pin 5-Plate
Pin 7-Heater
Pin 8-Cathode

VERTICAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except As Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	500 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE*	2000 [•] max.	volts
DC POSITIVE GRID VOLTAGE	0 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	-200 max.	volts

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

* The duration of the voltage pulse must not exceed 15% of one vertical scanning cycle. In a 525-line, 30-frame system, 15% of one vertical scanning cycle is 2.5 milliseconds.

[•] Under no circumstances should this absolute value be exceeded.

AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6AH4-GT



6AH4-GT

MEDIUM-MU TRIODE

CATHODE CURRENT:

DC	180 max.	ma
Peak	60 max.	ma
PLATE DISSIPATION	7.5 max.	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance	2.2 max.	megohms
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[▲] The dc component must not exceed 100 volts.

AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

**6AH6****6AH6****SHARP-CUTOFF PENTODE**

MINIATURE TYPE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.45 amp

Direct Interelectrode Capacitances:⁰Grid No.1 to Plate . . . 0.030 max μf Input. 10 μf Output 2 μf ⁰ with no external shield.**Mechanical:**

Mounting Position. Any

Maximum Overall Length 2-1/8"

Maximum Seated Length. 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip). . . 1-1/2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin

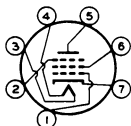
Basing Designation for BOTTOM VIEW 7BK

Pin 1-Grid No.1

Pin 2-Grid No.3

Pin 3-Heater

Pin 4-Heater



Pin 5-Plate

Pin 6-Grid No.2

Pin 7-Cathode

AMPLIFIER-Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 150 max. volts

TOTAL CATHODE CURRENT. 13 max. ma

PLATE DISSIPATION. 3.2 max. watts

GRID-No.2 DISSIPATION. 0.4 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . . 90 max. volts

Heater positive with respect to cathode. . . 90 max. volts

Characteristics:*Pentode Connection*

Plate Voltage. 300 volts

Grid No.3 (Suppressor) Tied to cathode at socket

Grid-No.2 Voltage. 150 volts

Cathode Resistor 160 ohms

Plate Resistance (Approx.) 0.5 megohm

Transconductance 9000 μmhos

Grid-No.1 Bias (Approx.) for

plate current of 10 μamp -7 volts

Plate Current. 10 ma

Grid-No.2 Current. 2.5 ma

NOV. 15, 1949

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AH6



6AH6

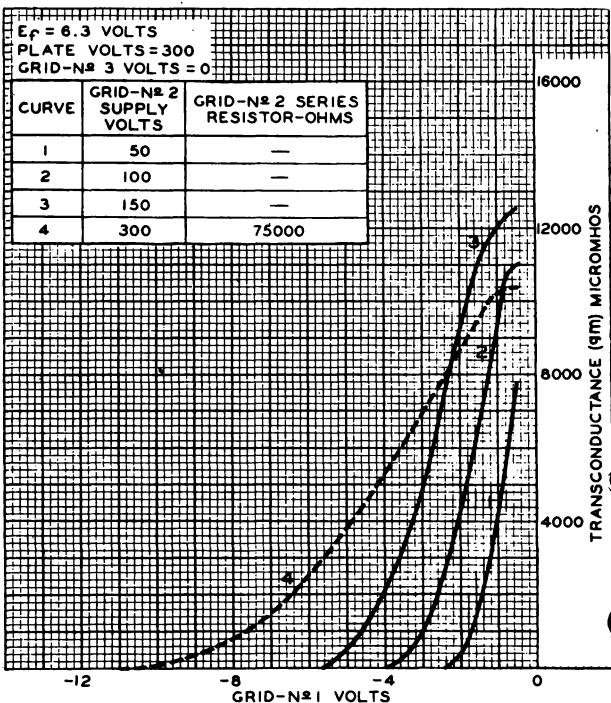
SHARP-CUTOFF PENTODE

Triode Connection

Grid No. 2 and Grid No. 3 Tied to Plate

Plate Voltage.	150	volts
Cathode Resistor	160	ohms
Amplification Factor	40	
Plate Resistance (Approx.)	3600	ohms
Transconductance	11000	μmhos
Grid-No. 1 Bias (Approx.) for		
plate current of 10 μamp	-7	volts
Plate Current.	12.5	ma

AVERAGE CHARACTERISTICS



92CM-7334

NOV. 15, 1949

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

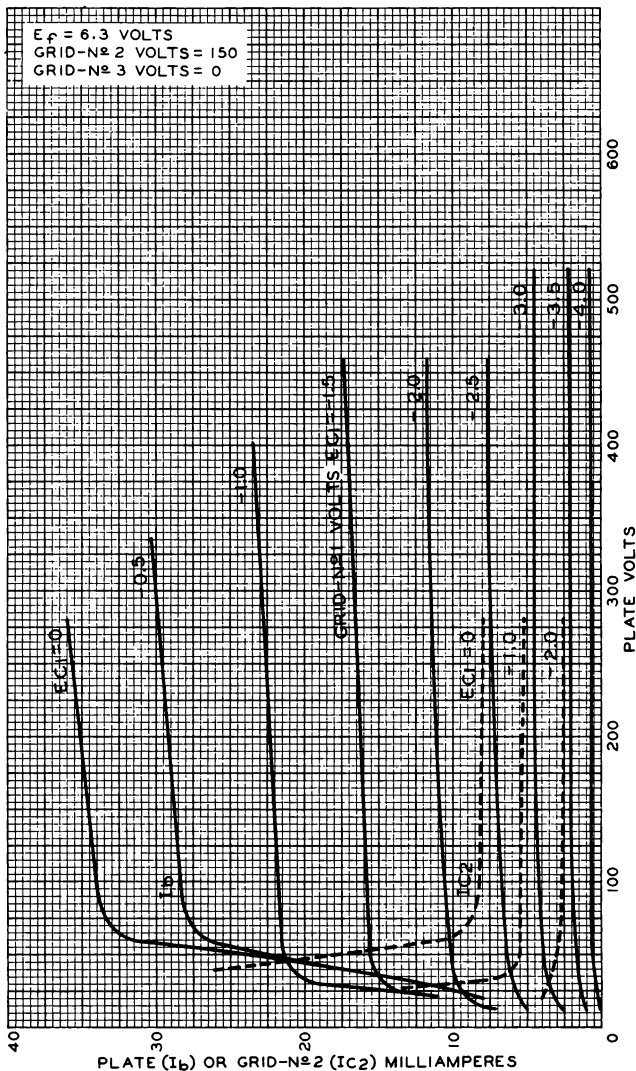
CE-7334



6AH6

6AH6

AVERAGE PLATE CHARACTERISTICS



AUG. 5, 1949

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7339

6AH6

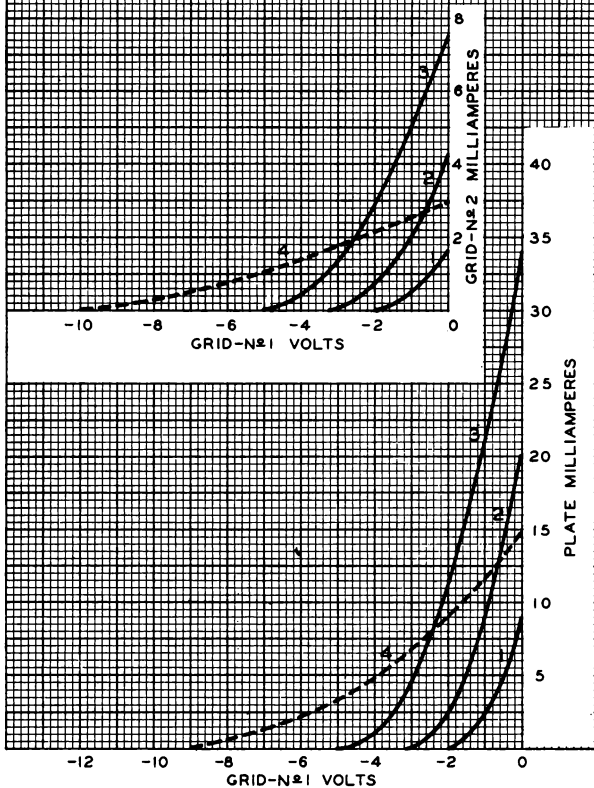


6AH6

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
 PLATE VOLTS = 300
 GRID-N $\circ$ 3 VOLTS = 0

CURVES	GRID-N $\circ$ 2 SUPPLY VOLTS	GRID-N $\circ$ 2 SERIES RESISTOR-OHMS
1	50	—
2	100	—
3	150	—
4	300	75000



AUG. 4, 1949

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7337



6AK5

6AK5

SHARP-CUTOFF PENTODE

7-PIN MINIATURE TYPE

*Useful at frequencies up to 400 Mc***GENERAL DATA****Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.175 amp

Direct Interelectrode Capacitances:

	<i>Without External Shield</i>	<i>With External Shield^o</i>	
Grid No.1 to plate	0.03 max.	0.02 max.	μf
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater	4	4	μf
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater	2.1	2.8	μf

Characteristics, Class A₁ Amplifier:

Plate Voltage.	120	180	volts
Grid-No.2 (Screen) Voltage	120	120	volts
Cathode-Bias Resistor.	180	180	ohms
Plate Resistance (Approx.)	0.30	0.50	megohm
Transconductance	5000	5100	μmhos
Plate Current.	7.5	7.7	ma
Grid-No.2 Current.	2.5	2.4	ma
Grid-No.1 Voltage (Approx.) for plate current of 10 μamp	-8.5	-8.5	volts

Mechanical:

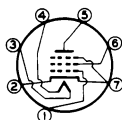
Mounting Position.	 Any
Maximum Overall Length	1-3/4"
Maximum Seated Length.	1-1/2"
Length, Base Seat to Bulb Top (Excluding tip).	1-1/8" $\pm 3/32$ "
Maximum Diameter	3/4"
Dimensional Outline.	<i>See General Section</i>
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 7BD

Pin 1-Grid No.1

Pin 2-Cathode,
Grid No.3,
Internal
Shield

Pin 3-Heater



Pin 4-Heater

Pin 5-Plate

Pin 6-Grid No.2

Pin 7-Same as
Pin 2^o With external shield JETEC No.316 connected to cathode.

← Indicates a change.

SEPT. 1, 1955

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AK5



6AK5

SHARP-CUTOFF PENTODE

AMPLIFIER - Class A₁

→ Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	180 max. volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	180 max. volts
GRID-No.2 VOLTAGE.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section
GRID-No.1 (CONTROL-GRID) VOLTAGE:	
Positive bias value.	0 max. volts
PLATE DISSIPATION.	1.7 max. watts
GRID-No.2 INPUT:	
For grid-No.2 voltages up to 90 volts.	0.5 max. watt
For grid-No.2 voltages between 90 and 180 volts.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section
CATHODE CURRENT.	18 max. ma
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode.	120 max. volts
Heater positive with respect to cathode.	120 max. volts

→ Indicates a change.

SEPT. 1, 1955

TUBE DIVISION

DATA

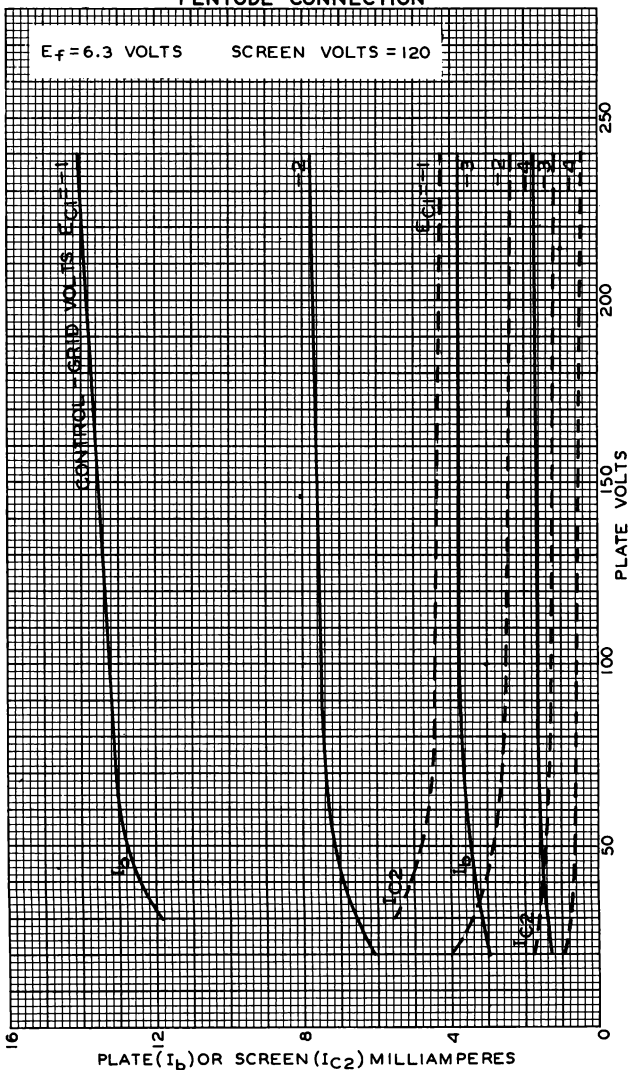
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AK5

AVERAGE PLATE CHARACTERISTICS
PENTODE CONNECTION

6AK5



FEB. 15, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

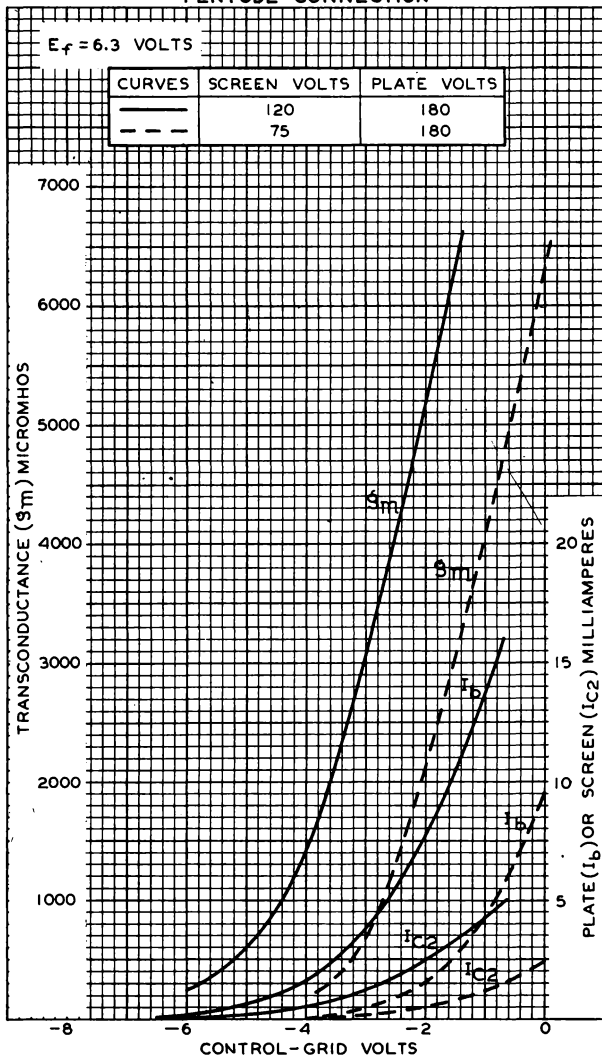
92CM-6504

6AK5



6AK5

AVERAGE CHARACTERISTICS PENTODE CONNECTION



FEB. 19, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6505



6AK6

6AK6

POWER AMPLIFIER PENTODE

MINIATURE TYPE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Direct Interelectrode Capacitances (Approx.):*		
Grid to Plate	0.12	μf
Input	3.6	μf
Output	4.2	μf
Maximum Overall Length		2-1/8"
Maximum Seated Height		1-7/8"
Length from Base Seat to Bulb Top (excluding tip)		1-1/2" $\pm$ 3/32"
Maximum Diameter		3/4"
Bulb		T-5-1/2
Base Δ		Miniature Button 7-Pin
Pin 1 - Grid No. 1		Pin 5 - Plate
Pin 2 - Grid No. 3		Pin 6 - Grid No. 2
Pin 3 - Heater		Pin 7 - Cathode
Pin 4 - Heater		
RCA Socket		Stock No. 9914
Mounting Position	BOTTOM VIEW (7BK)	Any



Maximum Ratings Are Design-Center Value

A-F AMPLIFIER

Plate Voltage	300 max. volts
Screen Voltage (Grid No. 2)	250 max. volts
Plate Dissipation	2.75 max. watts
Screen Dissipation	0.75 max. watt
D-C Heater-Cathode Potential	100 max. volts

Typical Operation and Characteristics - Class A₁ Amplifier:

Plate Voltage	180	volts
Suppressor (Grid No. 3)	Connected to cathode at socket	
Screen Voltage	180	volts
Grid Voltage (Grid No. 1) $\blacklozenge$	-9	volts
Peak A-F Grid Voltage	9	volts
Zero-Signal Plate Current	15	ma.
Zero-Signal Screen Current	2.5	ma.
Plate Resistance	0.2	megohm
Transconductance	2300	μmhos
Load Resistance	10000	ohms
Total Harmonic Distortion	10	%
Max.-Sig. Power Output	1.1	watts

* With no external shield.

† The d-c resistance in the grid circuit under maximum rated conditions should not exceed 0.5 megohm for cathode-bias operation and 0.1 megohm for fixed-bias operation.

Δ The center hole in sockets designed for this base provides for the possibility that this tube type may be manufactured with the exhaust-tube tip at the base end. For this reason, it is recommended that in equipment employing this tube type, no material be permitted to obstruct the socket hole.

OCT. 1, 1943

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

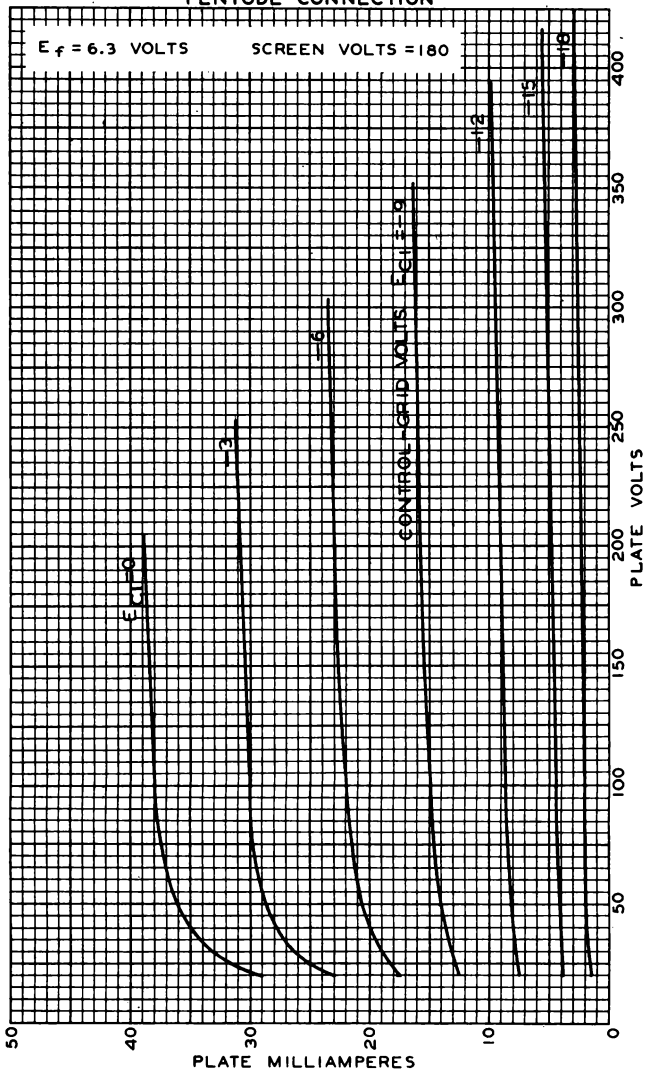
TENTATIVE DATA

6AK6



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AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



AUG. 11, 1943

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RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

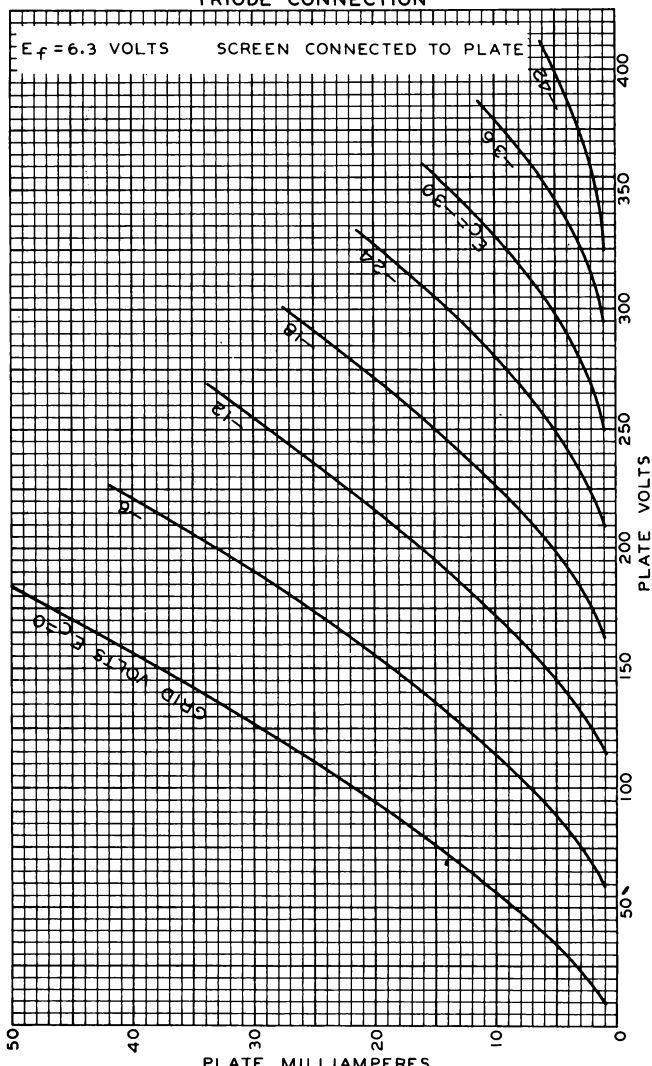
92C-6450



6AK6

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AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



AUG. 11, 1943

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92C-6449

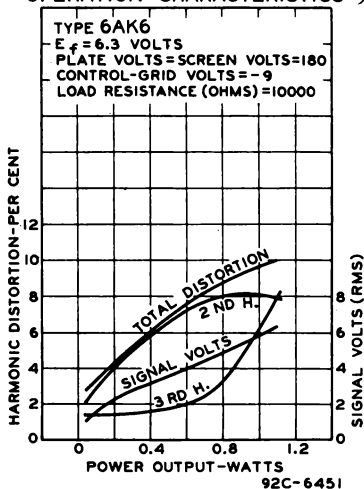
6AK6



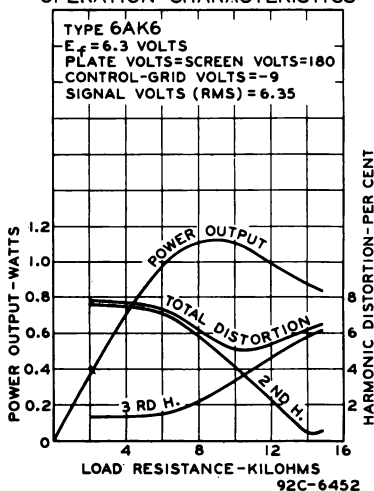
6AK6

POWER AMPLIFIER PENTODE

OPERATION CHARACTERISTICS



OPERATION CHARACTERISTICS



OCT. 1, 1943

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6451

CE-6452



6AL5

TWIN DIODE

MINIATURE TYPE

6AL5

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances (Approx.):^oPlate No. 1 to Cathode No. 1, Heater,
and Internal Shield* 2.5 μf Plate No. 2 to Cathode No. 2, Heater,
and Internal Shield[•] 2.5 μf Cathode No. 1 to Plate No. 1, Heater,
and Internal Shield* 3.4 μf Cathode No. 2 to Plate No. 2, Heater,
and Internal Shield[•] 3.4 μf Plate No. 1 to Plate No. 2[□] 0.068 max. μf

Cold Resonant Frequency (Each Unit, Approx.) 700 Mc

^o with no external shield.

* with plate and cathode of unit No.2 grounded.

• with plate and cathode of unit No.1 grounded.

□ with all other electrodes and internal shield grounded.

Mechanical:

Mounting Position. Any

Maximum Overall Length 1-3/4"

Maximum Seated Length. 1-1/2"

Length, Base Seat to Bulb Top (Excluding tip) . 1-1/8" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

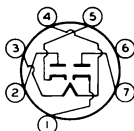
Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 6BT

Pin 1-Cathode of
Diode No.1Pin 2-Plate of
Diode No.2

Pin 3-Heater

Pin 4-Heater

Pin 5-Cathode of
Diode No.2Pin 6-Internal
ShieldPin 7-Plate of
Diode No.1

RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE 330 max. volts

PEAK PLATE CURRENT PER PLATE 54 max. ma

DC OUTPUT CURRENT PER PLATE. 9 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . 330 max. volts

Heater positive with respect to cathode. . 330 max. volts

<- Indicates a change.

MAY 3, 1954

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AL5



6AL5

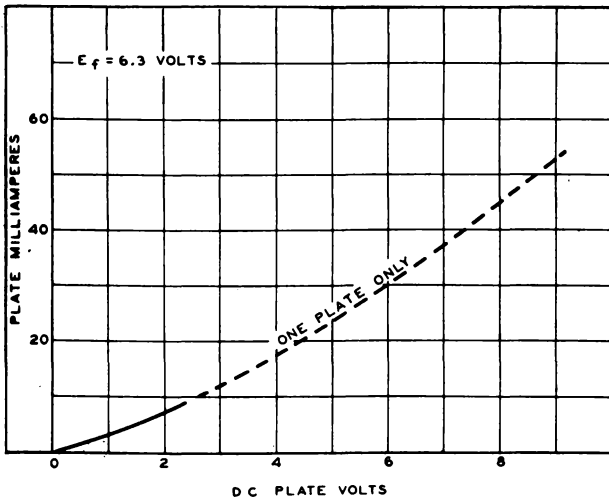
TWIN DIODE

Typical Operation as Half-Wave Rectifier:

The Two Units May Be Used Separately or in Parallel

AC Plate Voltage per Plate (RMS)	117	volts
Min. Total Effect. Plate-Supply		
Impedance per Plate	300	ohms
DC Output Current per Plate	9	ma

AVERAGE PLATE CHARACTERISTIC



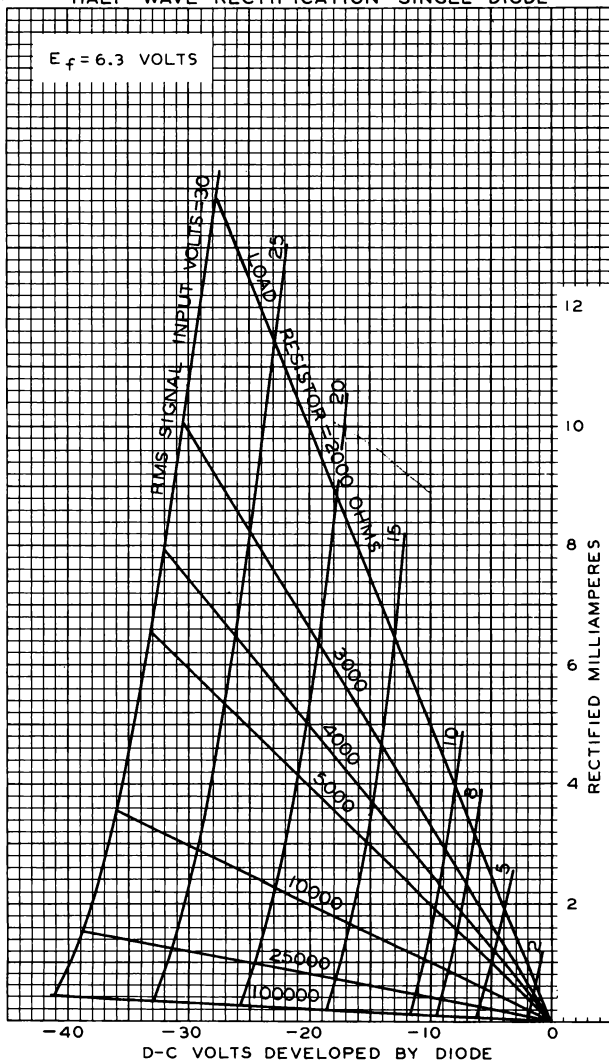
92CM-6560T



6AL5

6AL5

AVERAGE CHARACTERISTICS HALF-WAVE RECTIFICATION-SINGLE DIODE



JUNE 7, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6561



6AL7-GT ELECTRON-RAY TUBE

6AL7-GT

INDICATOR TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.15 amp

Mechanical:

Mounting Position Any

Maximum Overall Length 3-1/16"

Maximum Seated Length 2-1/2"

Maximum Diameter 1-9/32"

Bulb T-9

Base Intermediate-Shell Octal 8-Pin

Basing Designation for BOTTOM VIEW 8CH

Pin 1-Grid

Pin 2-Heater

Pin 3-Target

Pin 4-Deflecting

Electrode
No.2



Pin 5-Deflecting
Electrode
No.3

Pin 6-Deflecting
Electrode
No.1

Pin 7-Heater

Pin 8-Cathode

INDICATOR SERVICE

Maximum Ratings, Design-Center Values:

TARGET VOLTAGE {365 max. volts
220 min. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

Target Voltage 315 volts

Deflecting-Electrode-No.1 Voltage* 0 volts

Deflecting-Electrode-No.2 Voltage* 0 volts

Deflecting-Electrode-No.3 Voltage* 0 volts

Grid Voltage 0 volts

Cathode-Bias Resistor (Approx.) 3300 ohms

Grid Voltage for

Pattern cutoff (Approx.) -7 volts

Deflection Sensitivity (Approx.)*. 1 mm/volt

* with tube mounted horizontally and pins #4 & 8 in vertical plane (Pin # on top), deflecting electrode No.1 controls top left-hand section of pattern, deflecting electrode No.2 controls top right-hand section of pattern, deflecting electrode No.3 controls bottom section of pattern.

For first mm deflection (Deflecting Electrodes No.1 & No.2).

FEB. 1, 1949

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6AL7-GT



6AL7-GT

ELECTRON-RAY TUBE

PATTERN SEQUENCE DURING TUNING

CONTROL VOLTAGE SOURCE	CIRCUIT (NEXT PAGE)	OFF CHANNEL (-)	ON TUNE	ON CHANNEL OFF TUNE (+)	OFF CHANNEL (+)
DISCRIMINATOR (FM)	FIGS. 1 AND 2				
DISCRIMINATOR AND SQUELCH (FM)	FIG. 3				
DISCRIMINATOR AND LIMITER (FM)	FIG. 4				
AVC (FM)	FIG. 5				

FEB. 2, 1949

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CS-7171



6AL7-GT ELECTRON-RAY TUBE

6AL7-GT

TYPICAL CIRCUITS

FIG. 1

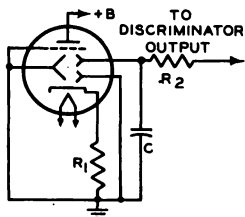


FIG. 2

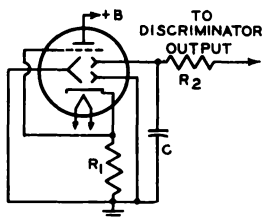


FIG. 3

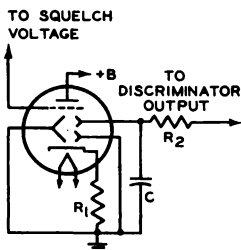


FIG. 4

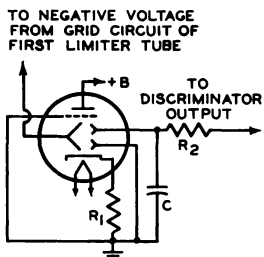
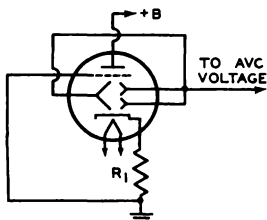


FIG. 5



+B = 315 VOLTS APPROX.
C = 0.05 μ F

R₁ = 3300 OHMS
R₂ = 1.0 MEGOHM

92CS-7169



6AM8

6AM8

DIODE—SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage. 6.3 ac or dc volts

Current. 0.45 amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield*	
<i>Diode Unit:</i>			
Plate to cathode, internal shield, and heater . . .	1.7	2.3	μf
Cathode to plate, internal shield, and heater . . .	4	4	μf
<i>Pentode Unit:</i>			
Grid No.1 to plate . . .	0.015 max.	0.015 max.	μf
Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater	6	6	μf
Plate to cathode, grid No.3 & internal shield, grid No.2, and heater	2.6	3.4	μf
Pentode grid No.1 to diode plate	0.006 max.	0.005 max.	μf
Pentode plate to diode cathode	0.15 max.	0.15 max.	μf
Pentode plate to diode plate	0.1 max.	0.035 max.	μf

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-3/16"

Maximum Seated Length. 1-15/16"

Length, Base Seat to Bulb Top (Excluding tip). 1-9/16" $\pm$ 3/32"

Maximum Diameter 7/8"

Bulb T-6-1/2

Base Small-Button Noval 9-Pin (JETEC No. E1-9)

Basing Designation for BOTTOM VIEW 9CY

Pin 1—Pentode

Cathode

Pin 2—Pentode

Grid No.1

Pin 3—Pentode

Grid No.2

Pin 4—Heater

Pin 5—Heater

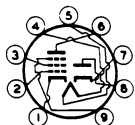
Pin 6—Pentode Plate

Pin 7—Diode

Cathode

Pin 8—Diode

Plate

Pin 9—Pentode Grid
No.3, Internal
Shield

* With external shield JETEC No. 315 connected to cathode of unit under test.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AM8



6AM8

DIODE—SHARP-CUTOFF PENTODE

PENTODE UNIT - Class A₁ Amplifier

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300	max.	volts
GRID-No.3 (SUPPRESSOR) VOLTAGE.	0	max.	volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	300	max.	volts
GRID-No.2 VOLTAGE.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section		

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value.	0	max.	volts
------------------------------	---	------	-------

PLATE DISSIPATION.	2.8	max.	watts
----------------------------	-----	------	-------

GRID-No.2 INPUT:

For grid-No.2 voltages up to 150 volts	0.5	max.	watt
--	-----	------	------

For grid-No.2 voltages between 150

and 300 volts. See Grid-No.2 Input Rating Chart
at front of Receiving Tube Section

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	200	max.	volts
---	-----	------	-------

Heater positive with respect to cathode	200 [▲]	max.	volts
---	------------------	------	-------

Typical Operation and Characteristics:

Plate-Supply Voltage.	200	volts
-------------------------------	-----	-------

Grid No.3.	Connected to cathode at socket		
--------------------	--------------------------------	--	--

Grid-No.2 Supply Voltage.	150	volts
-----------------------------------	-----	-------

Cathode-Bias Resistor.	120	ohms
--------------------------------	-----	------

Plate Resistance (Approx.)	600000	ohms
--------------------------------------	--------	------

Transconductance	7000	μmhos
----------------------------	------	-------

Grid-No.1 Voltage (Approx.) for			
---------------------------------	--	--	--

plate current of 10 μamp.	-8	volts
-----------------------------------	----	-------

Plate Current.	11.5	ma
------------------------	------	----

Grid-No.2 Current.	2.7	ma
----------------------------	-----	----

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For cathode-bias operation.	1.0	max.	megohm
-------------------------------------	-----	------	--------

For fixed-bias operation.	0.25	max.	megohm
-----------------------------------	------	------	--------

DIODE UNIT

Maximum Ratings, Design-Center Values:

DC PLATE CURRENT.	5	max.	ma
---------------------------	---	------	----

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	200	max.	volts
---	-----	------	-------

Heater positive with respect to cathode	200 [▲]	max.	volts
---	------------------	------	-------

[▲] The dc component must not exceed 100 volts.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

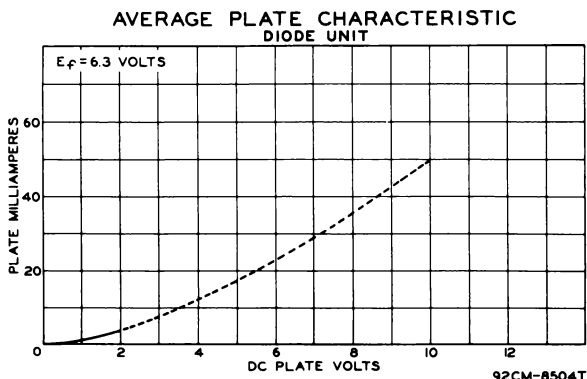
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AM8

6AM8

DIODE-SHARP-CUTOFF PENTODE



MAR. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

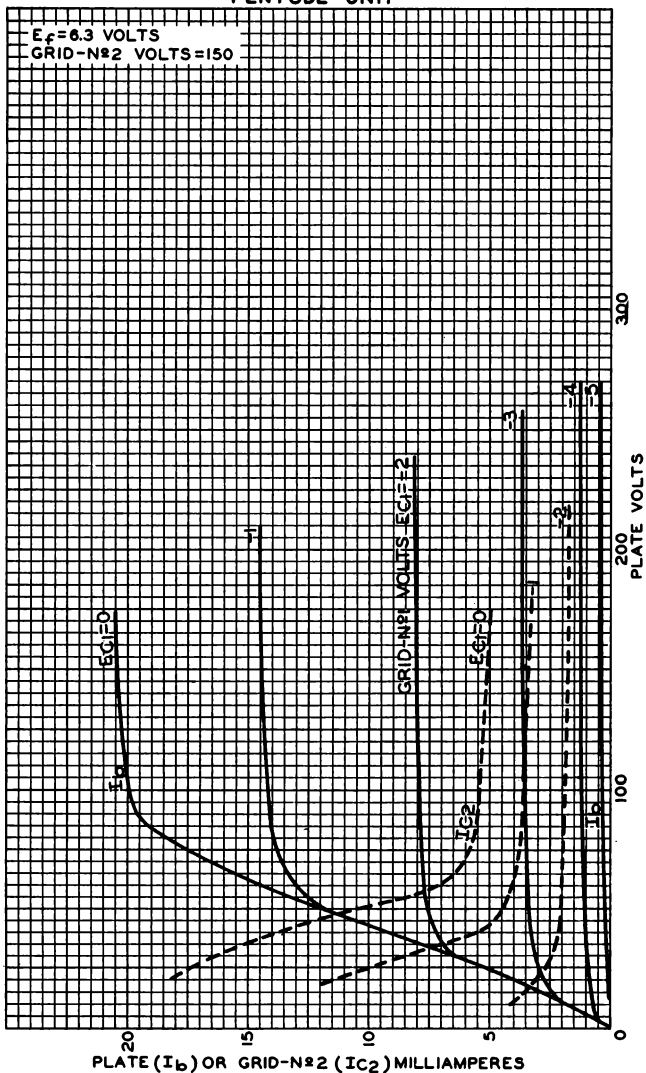
CE-8504T

6AM8



6AM8

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT



JAN. 14, 1954

TUBE DIVISION

92CM-8503

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AN8

6AN8

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts
Current 0.45 amp

Direct Interelectrode Capacitances
(Without external shield):

Triode Unit:

Grid to Plate 1.5 μf
Input 2.0 μf
Output 0.27 μf

Pentode Unit:

Grid No.1 to Plate . . 0.04 max. μf
Input 7 μf
Output 2.3 μf
Triode Grid to Pentode Plate 0.005 μf
Pentode Grid No.1 to Triode Plate 0.006 μf
Pentode Plate to Triode Plate 0.045 μf

Mechanical:

Mounting Position Any
Maximum Overall Length 2-3/16"
Maximum Seated Length 1-15/16"
Length, Base Seat to Bulb Top
(Excluding tip) 1-9/16" $\pm$ 3/32"
Maximum Diameter 7/8"
Bulb T-6-1/2
Base Small-Button Noval 9-Pin (JETEC No.E9-1)

BOTTOM VIEW

Pin 1: Triode Plate
Pin 2: Triode Grid
Pin 3: Triode
Cathode
Pin 4: Heater
Pin 5: Heater
Pin 6: Pentode
Plate



Pin 7: Pentode
Grid No.2
Pin 8: Pentode
Grid No.1
Pin 9: Pentode
Grid No.3,
Pentode
Cathode,
Int. Shield

Characteristics:

	Triode Unit	Pentode Unit	
Plate Supply Voltage	200	200	volts
Grid-No.2 Supply Voltage	—	150	volts
Grid-No.1 Voltage	—6	—	volts
Cathode-Bias Resistor	—	180	ohms
Amplification Factor	19	—	
Plate Resistance (Approx.)	5750	300000	ohms

MARCH 1, 1954

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AN8



6AN8

MEDIUM-MU TRIODE - SHARP-CUTOFF PENTODE

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Transconductance	3300	6200	μ mhos
Grid-No.1 Bias (Approx.) for Plate Current of 10 μ amp	-19	-8	volts
Plate Current	13	9.5	ma
Grid-No.2 Current	-	2.8	ma

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
PLATE VOLTAGE	300 max.	300 max.	volts
GRID-No.2 SUPPLY VOLTAGE .	-	300 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	-	<i>See Rating Curve at front of this Section</i>	
GRID-No.1 (CONTROL- GRID) VOLTAGE:			
Positive bias value . .	0 max.	0 max.	volts
PLATE DISSIPATION	2.5 max.	2 max.	watts
GRID-No.2 INPUT	-	0.5 max.	watt
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode . .	200 max.	200 max.	volts
Heater positive with respect to cathode . .	200 [▲] max.	200 [▲] max.	volts

Maximum Circuit Values:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Grid-No.1-Circuit Resistance:*			
For cathode-bias operation	1.0 max.	1.0 max.	megohm
For fixed-bias operation	0.5 max.	0.25 max.	megohm

* If either unit is operating at maximum rated conditions, grid-No.1-circuit resistances for both units should not exceed the stated values.

[▲] The dc component must not exceed 100 volts.

MARCH 1, 1954

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

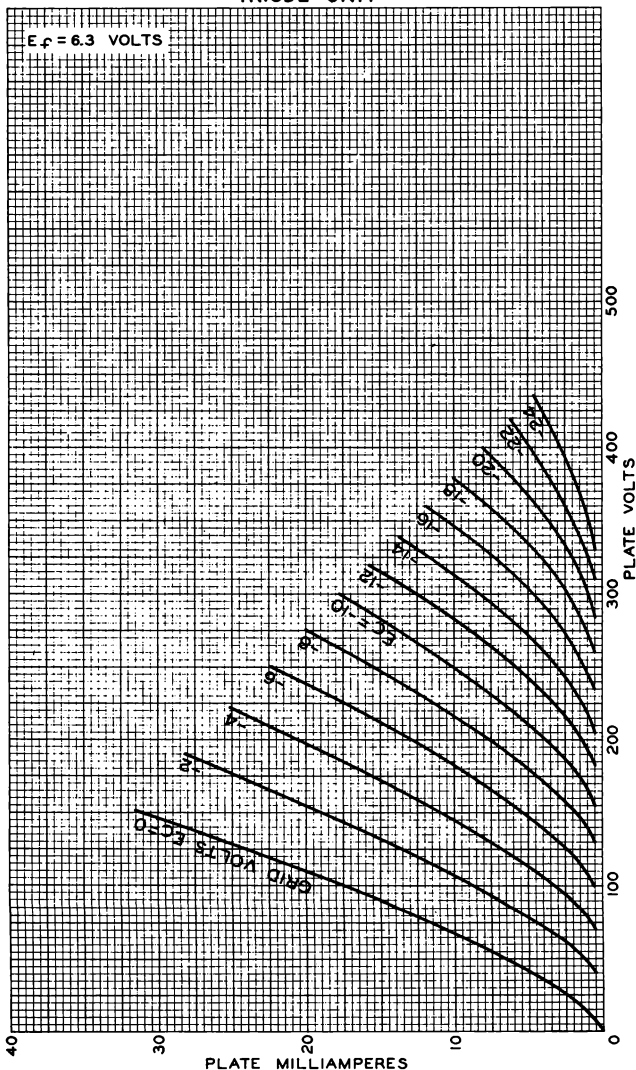
TENTATIVE DATA



6AN8

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT

6AN8



DEC. 23, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

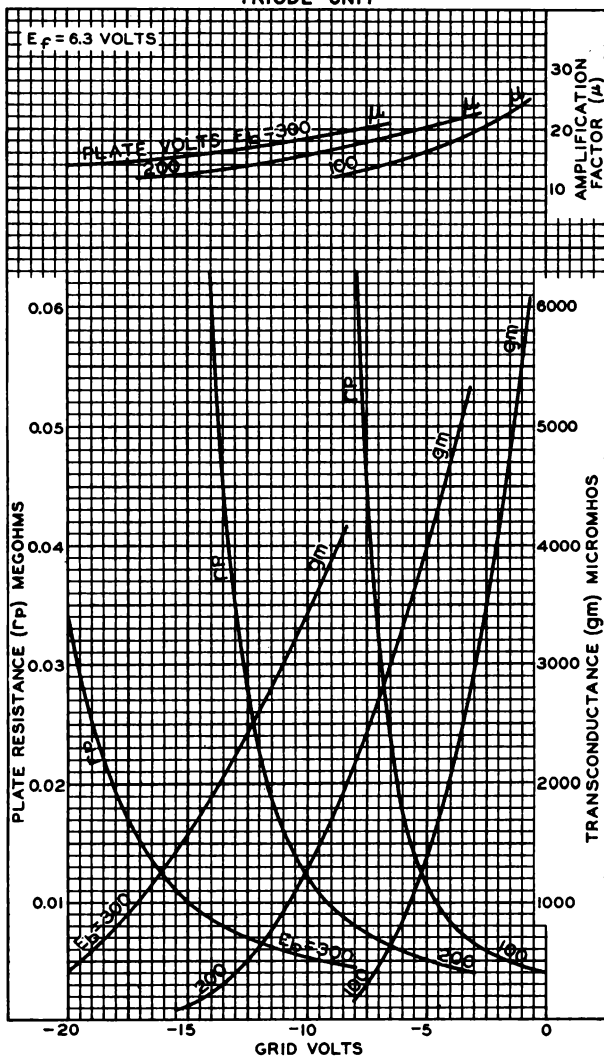
92CM-8209

6AN8



6AN8

AVERAGE CHARACTERISTICS TRIODE UNIT



DEC. 23, 1953

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 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

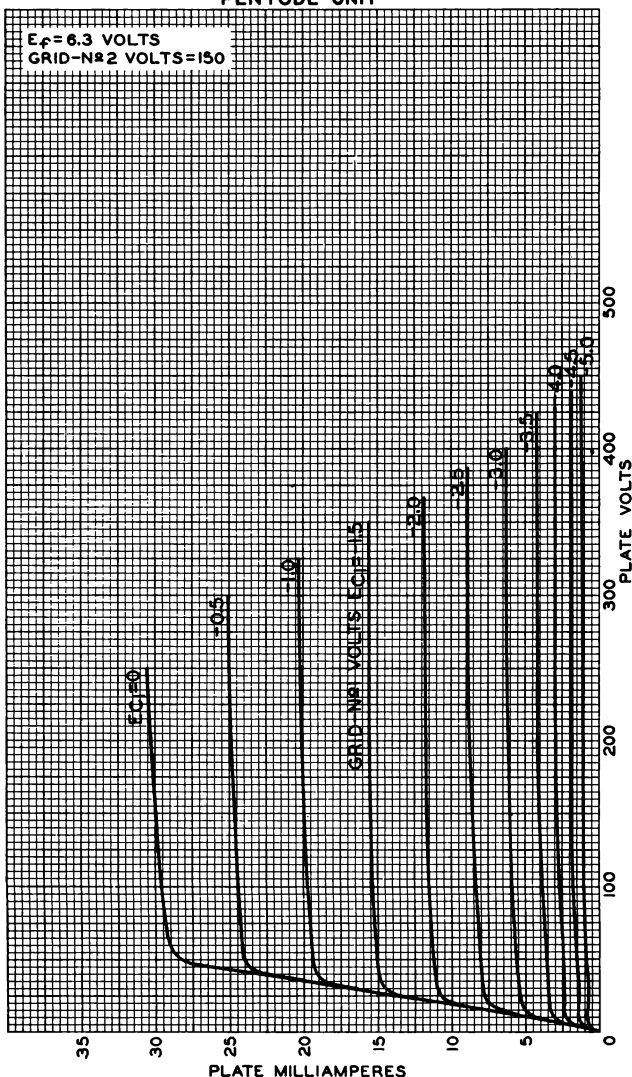
92CM-8207



6AN8

6AN8

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT



DEC. 23, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

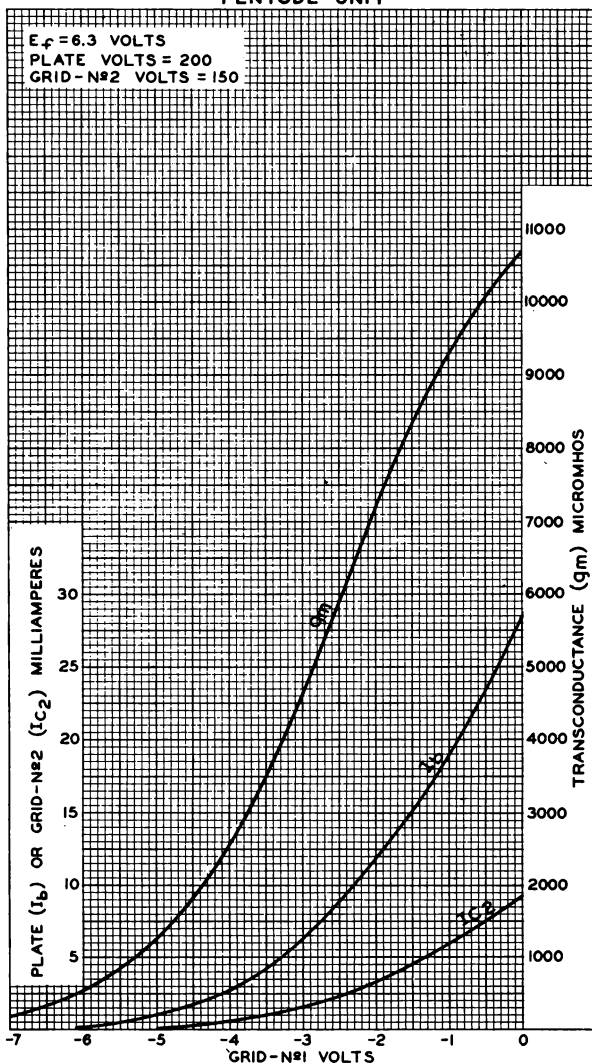
92CM-8206

6AN8



6AN8

AVERAGE CHARACTERISTICS PENTODE UNIT



DEC. 23, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6208

**6AQ5****BEAM POWER AMPLIFIER**

MINIATURE TYPE

6AQ5**GENERAL DATA****Electrical:**

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.45 amp

Direct Interelectrode Capacitances (Approx.):**

Grid No.1 to Plate. 0.35 μf Input 8.3 μf Output. 8.2 μf

** with no external shield.

Mechanical:

Mounting Position Any

Maximum Overall Length. 2-5/8"

Maximum Seated Length 2-3/8"

Length from Base Seat to Bulb Top (Excluding tip) 2" $\pm 3/32$ "

Maximum Diameter. 3/4"

Bulb. T-5-1/2

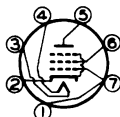
Base. Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW. 7BZ

Pin 1-Grid No.1

Pin 2-Cathode,
Grid No.3

Pin 3-Heater



Pin 4-Heater

Pin 5-Plate

Pin 6-Grid No.2

Pin 7-Grid No.1

AF POWER AMPLIFIER - Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE 250 max. volts

GRID-No.2 VOLTAGE 250 max. volts

PLATE DISSIPATION 12 max. watts

GRID-No.2 INPUT 2 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

BULB TEMPERATURE (At hottest point)*. 250 max. °C

Typical Operation and Characteristics:

Plate Voltage 180 250 volts

Grid-No.2 (Screen) Voltage. 180 250 volts

Grid-No.1 (Control-Grid) Voltage. -8.5 -12.5 volts

Peak AF Grid-No.1 Voltage 8.5 12.5 volts

High ambient temperature and shielding may necessitate a reduction in operating dissipation. When tube shields are used, it is advisable to paint the inside and outside surfaces of the tube shield a dull black and to provide ventilation slots to reduce operating temperature.

← Indicates a change

MAY 1, 1952

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AQ5



6AQ5

BEAM POWER AMPLIFIER

Zero-Sig. Plate Current	29	45	ma.
Max.-Sig. Plate Current	30	47	ma.
Zero-Sig. Grid-No.2 Cur. (Approx.) . .	3	4.5	ma.
Max.-Sig. Grid-No.2 Cur. (Approx.) . .	4	7	ma.
Plate Resistance (Approx.)	58000	52000	ohms
Transconductance	3700	4100	μmhos
Load Resistance	5500	5000	ohms
Total Harmonic Distortion	8	8	%
Max.-Sig. Power Output	2.0	4.5	watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias.	0.1	megohm
For cathode bias.	0.5	megohm

AF POWER AMPLIFIER - Class AB₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	250 max.	volts
GRID-No.2 VOLTAGE	250 max.	volts
PLATE DISSIPATION	12 max.	watts
GRID-No.2 DISSIPATION	2 max.	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode .	90 max.	volts
Heater positive with respect to cathode .	90 max.	volts

→ BULB TEMPERATURE (At hottest point)*. 250 max. °C

Typical Operation and Characteristics:

Unless otherwise specified, values are for 2 tubes

Plate Voltage	250	volts
Grid-No.2 (Screen) Voltage	250	volts
Grid-No.1 (Control-Grid) Voltage	-15	volts
Peak AF Grid-to-Grid Voltage	30	volts
Zero-Signal Plate Current	70	ma.
Max.-Signal Plate Current	79	ma.
Zero-Signal Grid-No.2 Current	5	ma.
Max.-Signal Grid-No.2 Current	13	ma.
Plate Resistance (per tube)	60000	ohms
Transconductance (per tube)	3750	μmhos
Effective Load Resistance (Plate to plate). .	10000	ohms
Total Harmonic Distortion	5	%
Max.-Signal Power Output	10	watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias.	0.1	megohm
For cathode bias.	0.5	megohm

Curves for the 6AQ5, within its ratings, are the same as those shown for type 6V6.

* See preceding page.

→ indicates a change

MAY 1, 1952

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AQ6

DUPLEX-DIODE HIGH-MU TRIODE

MINIATURE TYPE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Direct Interelectrode Capacitances - Triode Unit: ^o		
Grid to Plate	1.8	μf
Grid to Cathode & Heater	1.7	μf
Plate to Cathode & Heater	1.5	μf
Maximum Overall Length		2-1/8"
Maximum Seated Height		1-7/8"
Length from Base Seat		
to Bulb Top (excluding tip)		1-1/2" $\pm$ 3/32"
Maximum Diameter		3/4"
Bulb		T-5 $\frac{1}{2}$
Base [▲]		Miniature Button 7-Pin
Pin 1-Triode Grid		Pin 5-Diode Plate No.2
Pin 2-Cathode		Pin 6-Diode Plate No.1
Pin 3-Heater		Pin 7-Triode Plate
Pin 4-Heater		
RCA Socket		Stock No.9914
Mounting Position		Any



BOTTOM VIEW (7BT)

Maximum Ratings Are Design-Center Values

TRIODE UNIT

Plate Voltage		300 max. volts
D-C Heater-Cathode Potential		90 max. volts
Characteristics - Class A_1 Amplifier:		
Plate Voltage	100	250 volts
Grid Voltage	-1	-3 volts
Amplification Factor	70	70
Plate Resistance	61000	58000 ohms
Transconductance	1150	1200 μmhos
Plate Current	0.8	1.0 ma.

Typical Operation with Resistance Coupling:

Same as for Type 6T7-G in RESISTANCE-COUPLED AMPLIFIER CHART.

DIODE UNITS - Two

For consideration of these units, see Type 6ST7.

^o With close-fitting shield connected to cathode.

[▲] The center hole in sockets for this base provides for the possibility that this tube type may be manufactured with the exhaust-tube tip at the base end. For this reason, it is recommended that in equipment employing this tube type, no material be permitted to obstruct the socket hole.

JUNE 30, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

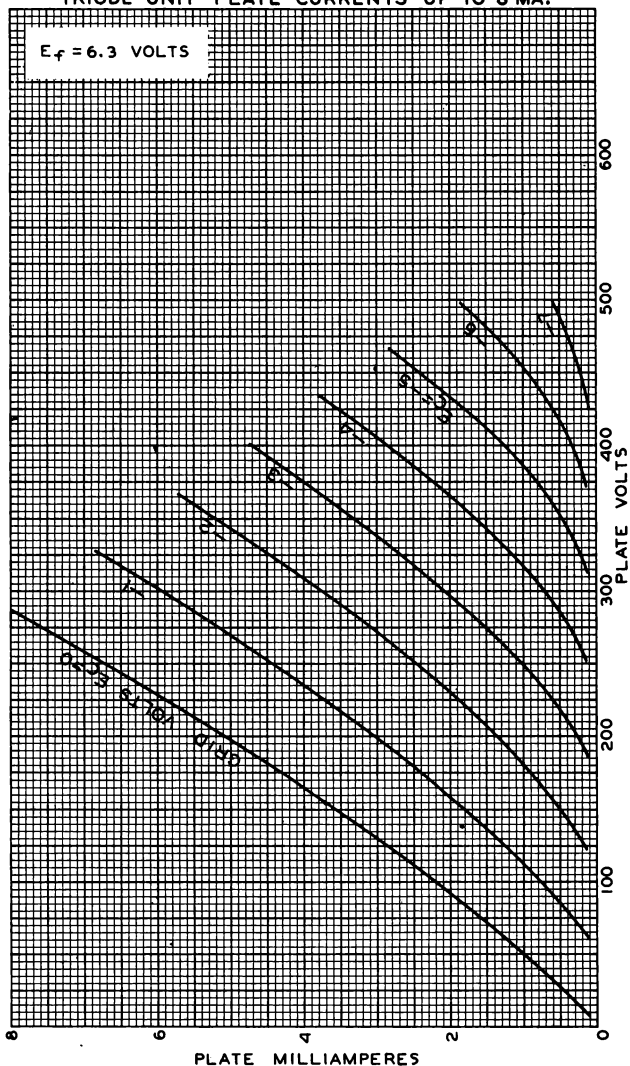
6AQ6



6AQ6

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT—PLATE CURRENTS UP TO 8 MA.

$E_f = 6.3$ VOLTS



APR. 7, 1944

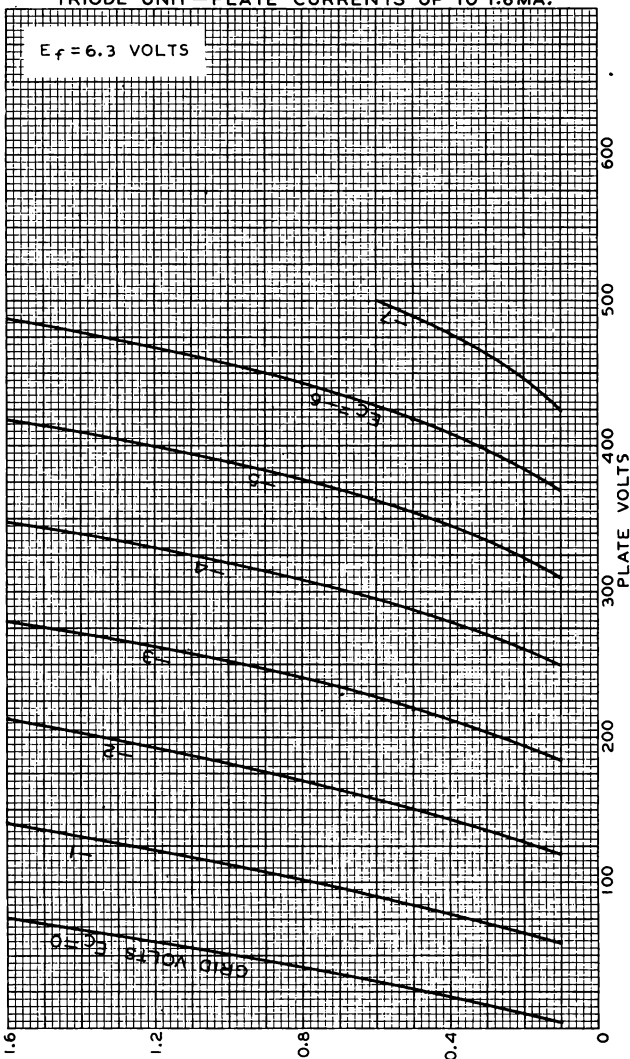
RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6551



6AQ6

6AQ6
AVERAGE PLATE CHARACTERISTICS
TRIODE UNIT—PLATE CURRENTS UP TO 1.6 MA.



APR. 8, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6552



6AQ7-GT

6AQ7-GT

TWIN DIODE—HIGH-MU TRIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances:

Triode Unit:

Grid to Plate 3.0 $\mu\mu\text{f}$

Grid to Cathode. 2.8 $\mu\mu\text{f}$

Plate to Cathode. 3.2 $\mu\mu\text{f}$

Grid to Diode Cathode⁰. 0.25 max. $\mu\mu\text{f}$

Diode-No.1 Plate to

Diode Cathode* 2.2 $\mu\mu\text{f}$

Diode-No.2 Plate to

Diode Cathode* 2.4 $\mu\mu\text{f}$

Diode-No.1 Plate to

Diode-No.2 Plate* 0.5 $\mu\mu\text{f}$

⁰ with external shield No.308 connected to Pin No.6.

* with external shield No.308 connected to Pin No.2.

Mechanical:

Mounting Position. Any

Maximum Overall Length 3-5/16"

Maximum Seated Length. 2-3/4"

Maximum Diameter 1-9/32"

Bulb T-9

Base Intermediate-Shell Octal 8-Pin

Basing Designation for BOTTOM VIEW 8CK

Pin 1—Diode-No.2

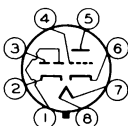
Plate

Pin 2—Cathode of

Diode Units

Pin 3—Diode-No.1

Plate



Pin 4—Triode Grid

Pin 5—Triode Plate

Pin 6—Cathode of

Triode Unit

Pin 7—Heater

Pin 8—Heater

TRIODE UNIT

AMPLIFIER - Class A₁

Maximum Ratings. Design-Center Values:

PLATE VOLTAGE. 250 max. volts

GRID VOLTAGE:

Positive bias value. 0 max. volts

PLATE DISSIPATION. 1 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

Typical Operation and Characteristics:

Plate Voltage. 100 250 volts

Grid Voltage. -1 -2 volts

MAY 1, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6AQ7-GT



6AQ7-GT TWIN DIODE—HIGH-MU TRIODE

Amplification Factor	79	70	
Plate Resistance (Approx.) . . .	64000	44000	.. ohms
Transconductance	1250	1600	.. μ mhos
Plate Current.	1.1	2.3	.. ma

Typical Operation as Resistance-Coupled Amplifier:

*See RESISTANCE-COUPLED AMPLIFIER CHARTS
at front of this Section.*

DIODE UNITS - Two

Maximum Ratings, Design-Center Values:

PLATE CURRENT (For Each Diode) 0.9 max. ma

MAY 1, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



6AR5

POWER PENTODE

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.4 amp

Mechanical:

Mounting Position. Any

Maximum Overall Length. 2-5/8"

Maximum Seated Length. 2-3/8"

Length, Base Seat to Bulb Top (excluding tip). . . 2" $\pm$ 3/32"

Maximum Diameter. 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin

Basing Designation for BOTTOM VIEW. 6CC

Pin 1-Grid No.1

Pin 2-Cathode,

Grid No.3

Pin 3-Heater

Pin 4-Heater



Pin 5-Plate

Pin 6-Grid No.2

Pin 7-No

Connection

AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 250 max. volts

GRID-No.2 (SCREEN) VOLTAGE. 250 max. volts

PLATE DISSIPATION. 8.5 max. watts

GRID-No.2 DISSIPATION. 2.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . . 90 max. volts

Heater positive with respect to cathode. . . 90 max. volts

Typical Operation and Characteristics:

Plate Voltage. 250 250 volts

Grid-No.2 Voltage. 250 250 volts

Grid-No.1 (Control-Grid) Voltage. . . -16.5 -18 volts

Peak AF Grid-No.1 Voltage. 16.5 18 volts

Zero-Signal Plate Current. 34 32 ma

Max.-Signal Plate Current. 35 33 ma

Zero-Signal Grid-No.2 Current. 5.7 5.5 ma

Max.-Signal Grid-No.2 Current. 10 10 ma

Plate Resistance (Approx.) 65000 68000 ohms

Transconductance 2400 2300 μ mhos

Load Resistance. 7000 7600 ohms

Total Harmonic Distortion. 7 11 %

Max.-Sig. Power Output 3.2 3.4 watts

(continued on next page)

MAY 20, 1949

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AR5



6AR5

POWER PENTODE

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias.	0.1 max.	megohm
For cathode bias.	0.5 max.	megohm

*Curves for the 6AR5 are the same as those
shown for type 6X6-GT.*

MAY 20, 1949

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



6AS5

BEAM POWER AMPLIFIER

MINIATURE TYPE

6AS5

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.8 amp

Direct Interelectrode Capacitances (Approx.):⁰Grid No.1 to Plate 0.6 μf Input. 12 μf Output 6.2 μf ⁰ With no external shield.**Mechanical:**

Mounting Position. Any

Maximum Overall Length 2-5/8"

Maximum Seated Length. 2-3/8"

Length, Base Seat to Bulb Top (excluding tip). 2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

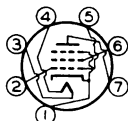
Base Small-Button Miniature 7-Pin

Basing Designation for BOTTOM VIEW 7CV

Pin 1-Cathode,
Grid No.3

Pin 2-Grid No.1

Pin 3-Heater



Pin 4-Heater

Pin 5-Grid No.1

Pin 6-Grid No.2

Pin 7-Plate

AF POWER AMPLIFIER - Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 150 max. volts

GRID-No.2 (SCREEN) VOLTAGE 117 max. volts

PLATE DISSIPATION. 5.5 max. watts

GRID-No.2 DISSIPATION. 1 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

Typical Operation and Characteristics:

Plate Voltage. 150 . . . volts

Grid-No.2 Voltage. 110 . . . volts

Grid-No.1 (Control-Grid) Voltage -8.5 . . . volts

Peak AF Grid-No.1 Voltage. 8.5 . . . volts

Zero-Signal Plate Current. 35 . . . ma

Max.-Signal Plate Current. 36 . . . ma

Zero-Signal Grid-No.2 Current. 2 . . . ma

Max.-Signal Grid-No.2 Current. 6.5 . . . ma

Transconductance 5600 μmhos

Load Resistance. 4500 . . . ohms

MAR. 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6AS5



6AS5

BEAM POWER AMPLIFIER

Total Harmonic Distortion.	10 . .	%
Max.-Sig. Power Output	2.2 . .	watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias	0.1 . .	megohm
For cathode bias	0.5 . .	megohm

MAR. 15, 1948

TUBE DEPARTMENT

TENTATIVE DATA

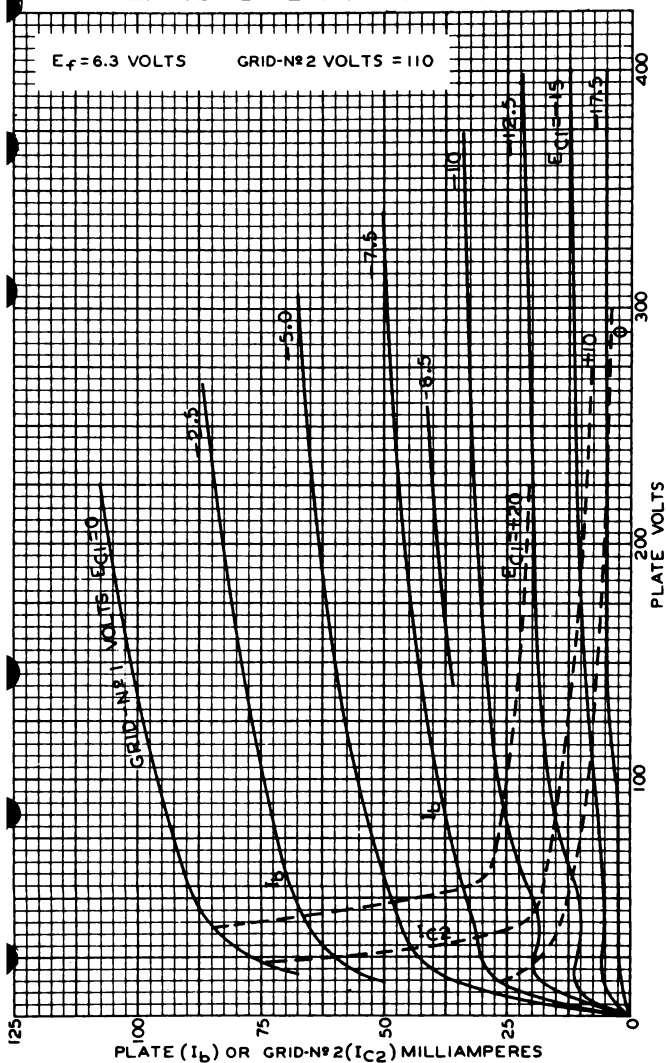
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AS5

6AS5

AVERAGE PLATE CHARACTERISTICS



FEB. 17, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

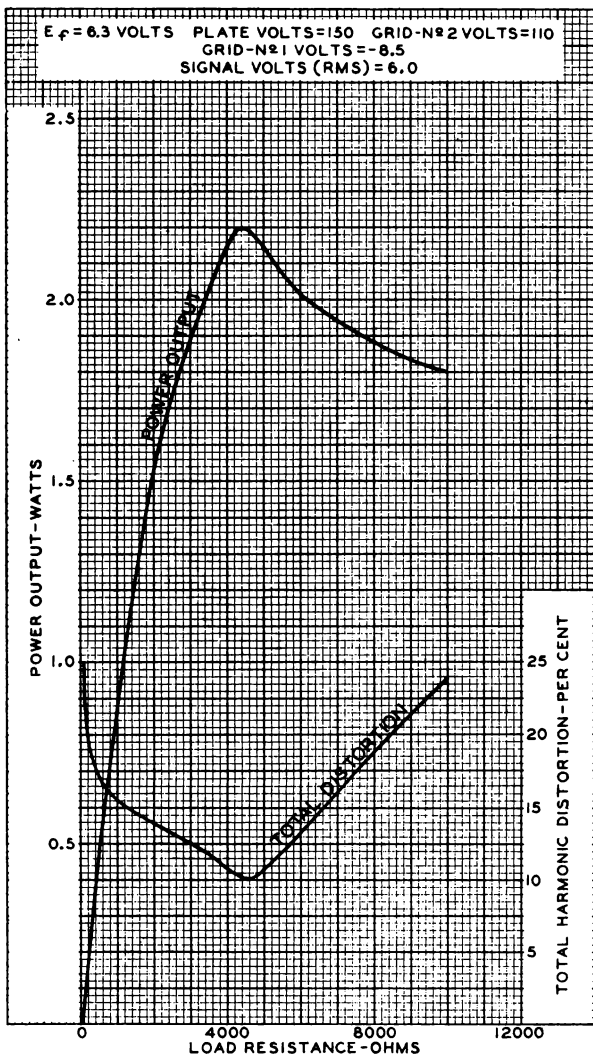
92CM - 6921R1

6AS5



6AS5

OPERATION CHARACTERISTICS



JAN. 12, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6922



6AS8

6AS8

DIODE—SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts

Current 0.45 amp

Direct Interelectrode Capacitances (Approx.):*

Diode Unit:

Plate to heater and cathode and internal shield	3.0	μf
--	-----	---------------

Pentode Unit:

Grid No.1 to plate	0.04 max.	μf
------------------------------	-----------	---------------

Input	7	μf
-----------------	---	---------------

Output	2.2	μf
------------------	-----	---------------

Pentode grid to diode plate	0.005 max.	μf
---------------------------------------	------------	---------------

Pentode plate to diode cathode	0.15 max.	μf
--	-----------	---------------

Pentode plate to diode plate	0.10 max.	μf
--	-----------	---------------

Characteristics, Class A₁:

Plate-Supply Voltage	200	volts
--------------------------------	-----	-------

Grid No.3	Connected to cathode at socket	
---------------------	--------------------------------	--

Grid-No.2 Supply Voltage	150	volts
------------------------------------	-----	-------

Cathode-Bias Resistor	180	ohms
---------------------------------	-----	------

Plate Resistance (Approx.)	300000	ohms
--------------------------------------	--------	------

Transconductance	6200	μmhos
----------------------------	------	------------------

Grid-No.1 Bias (Approx.) for Plate

Current of 10 μamp	-8	volts
---	----	-------

Plate Current	9.5	ma
-------------------------	-----	----

Grid-No.2 Current	3	ma
-----------------------------	---	----

Mechanical:

Mounting Position	Any
-----------------------------	-----

Maximum Overall Length	2-3/16"
----------------------------------	---------

Maximum Seated Length	1-15/16"
---------------------------------	----------

Length, Base Seat to Bulb Top	
-------------------------------	--

(Excluding Tip)	1-9/16" $\pm$ 3/32"
---------------------------	---------------------

Maximum Diameter	7/8"
----------------------------	------

Bulb	T-6-1/2
----------------	---------

Base	Small-Button Noval 9-Pin (JETEC No.E9-1)
----------------	--

Basing Designation for BOTTOM VIEW	9DS
--	-----

Pin 1 - Pentode Grid No.2	
------------------------------	--

Pin 2 - Pentode Grid No.1	
------------------------------	--

Pin 3 - Pentode Cathode	
----------------------------	--

Pin 4 - Heater	
----------------	--

Pin 5 - Heater	
----------------	--



Pin 6 - Diode Plate	
------------------------	--

Pin 7 - Pentode Grid No.3, Int.Shield	
---	--

Pin 8 - Diode Cathode	
--------------------------	--

Pin 9 - Pentode Plate	
--------------------------	--

* With no external shield.

MAY 3, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6AS8



6AS8

DIODE-SHARP-CUTOFF PENTODE

. PENTODE UNIT - Class A₁ Amplifier

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID-No.3 (SUPPRESSOR) VOLTAGE	0 max.	volts
GRID-No.2 SUPPLY VOLTAGE	300 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	See Rating Curve at front of this Section	

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value	0 max.	volts
PLATE DISSIPATION	2.5 max.	watts
GRID-No.2 INPUT	0.5 max.	watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200*max.	volts

Maximum Circuit Values (For maximum rated conditions):

Grid-No.1-Circuit Resistance:

For cathode-bias operation	1.0 max.	megohm
For fixed-bias operation	0.25 max.	megohm

DIODE UNIT

Maximum Ratings, Design-Center Values:

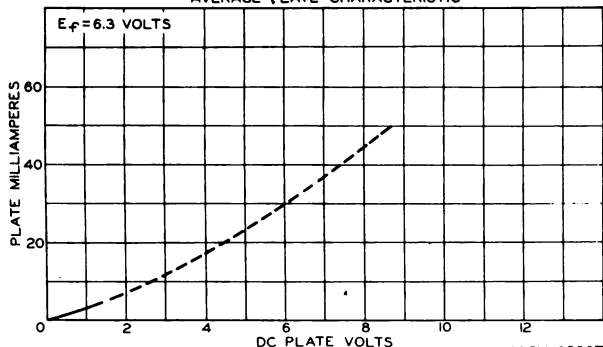
PEAK INVERSE PLATE VOLTAGE	330 max.	volts
PEAK PLATE CURRENT	50 max.	ma
DC PLATE CURRENT	5 max.	ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200*max.	volts

* The dc component must not exceed 100 volts.

AVERAGE PLATE CHARACTERISTIC



92CM-8236T

MAY 3, 1954

TUBE DIVISION

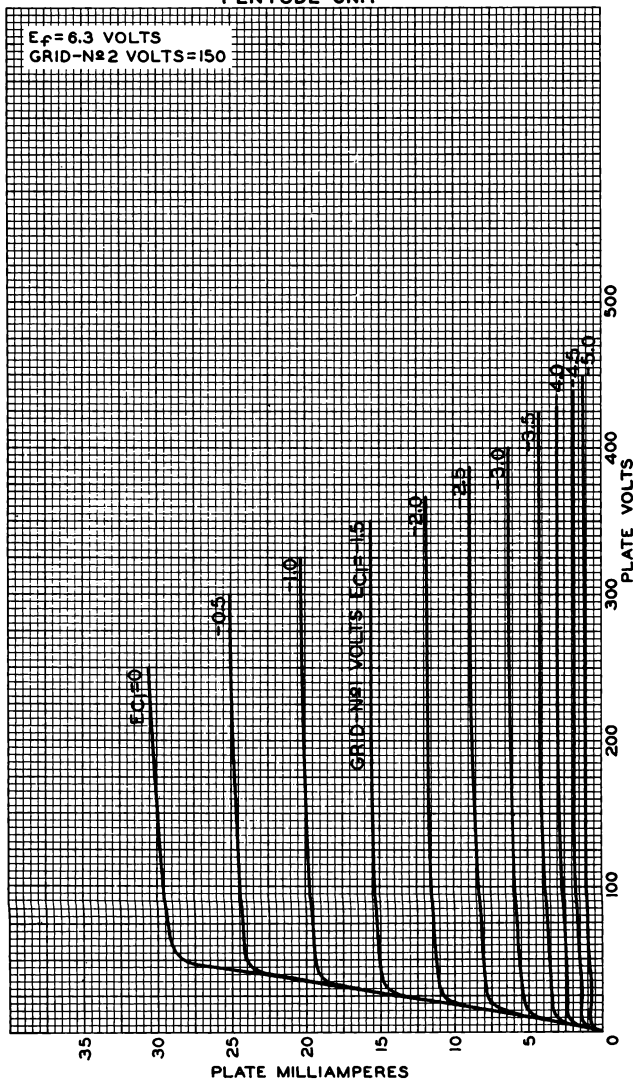
TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AS8

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT



DEC.23,1953

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8206

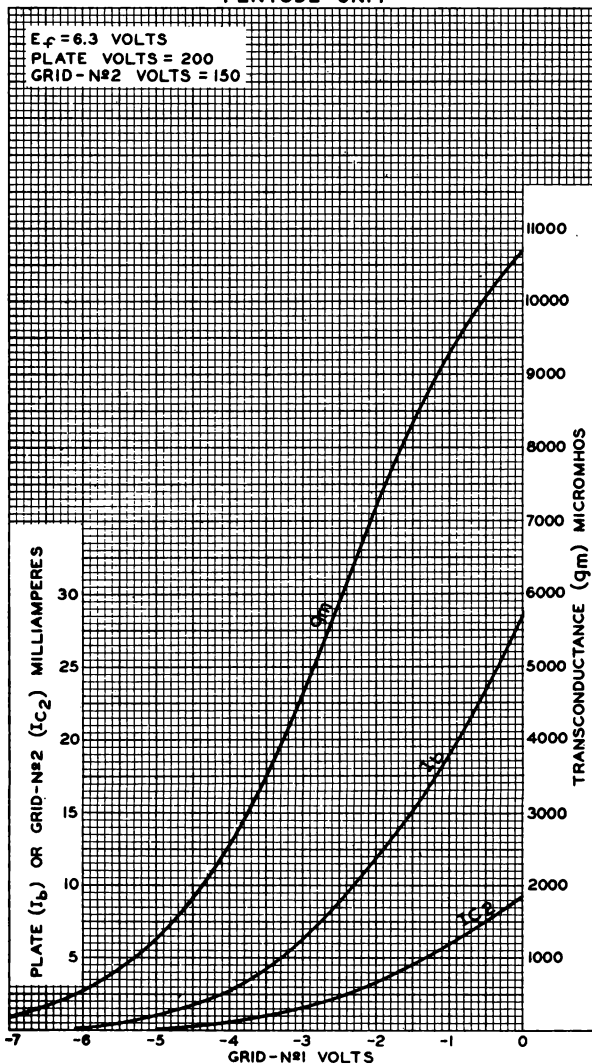
6AS8

6AS8



6AS8

AVERAGE CHARACTERISTICS PENTODE UNIT



DEC. 23, 1953

 TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8208



6AT6

6AT6 TWIN DIODE—HIGH-MU TRIODE

7-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
Grid to triode plate.	2.0	2.0	μmf
Grid to cathode and heater. . .	2.2	2.2	μmf
Plate to cathode and heater . .	0.8	1.2	μmf
Plate of diode unit No.2 to triode grid.	0.04 max.		μmf

Characteristics, Class A₁ Amplifier (Triode Unit):

Plate Voltage	100	250	volts
Grid Voltage.	-1	-3	volts
Amplification Factor.	70	70	
Plate Resistance (Approx.). . .	54000	58000	ohms
Transconductance.	1300	1200	μmhos
Plate Current	0.8	1	ma

Mechanical:

Mounting Position Any

Maximum Overall Length. 2-1/8"

Maximum Seated Length 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip) 1-1/2" $\pm$ 3/32"

Maximum Diameter. 3/4"

Dimensional Outline See General Section

Bulb. T-5-1/2

Base. Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW. 7BT

Pin 1 - Triode Grid

Pin 2 - Cathode

Pin 3 - Heater

Pin 4 - Heater



Pin 5 - Diode

Plate No.2

Pin 6 - Diode

Plate No.1

Pin 7 - Triode Plate

TRIODE UNIT—AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRID VOLTAGE:

Positive bias value. 0 max. volts

PLATE DISSIPATION. 0.5 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

^o With external shield JETEC No.316 connected to cathode.

← Indicates a change.

SEPT. 1, 1955

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AT6



6AT6

TWIN DIODE—HIGH-MU TRIODE

→ **Typical Operation as Resistance-Coupled Amplifier:**

*See RESISTANCE-COUPLED AMPLIFIER CHART No. 7
at front of this Section*

→ **DIODE UNITS**

Maximum Ratings, Design-Center Values:

PLATE CURRENT (For each diode). 1.0 max. ma

Diode Considerations:

Consideration of these units, including typical circuits and diode curves, is given at the front of this Section. Diode biasing of the triode unit of the 6AT6 is not suitable.

→ Indicates a change.

SEPT. 1, 1955

DATA

TUBE DIVISION

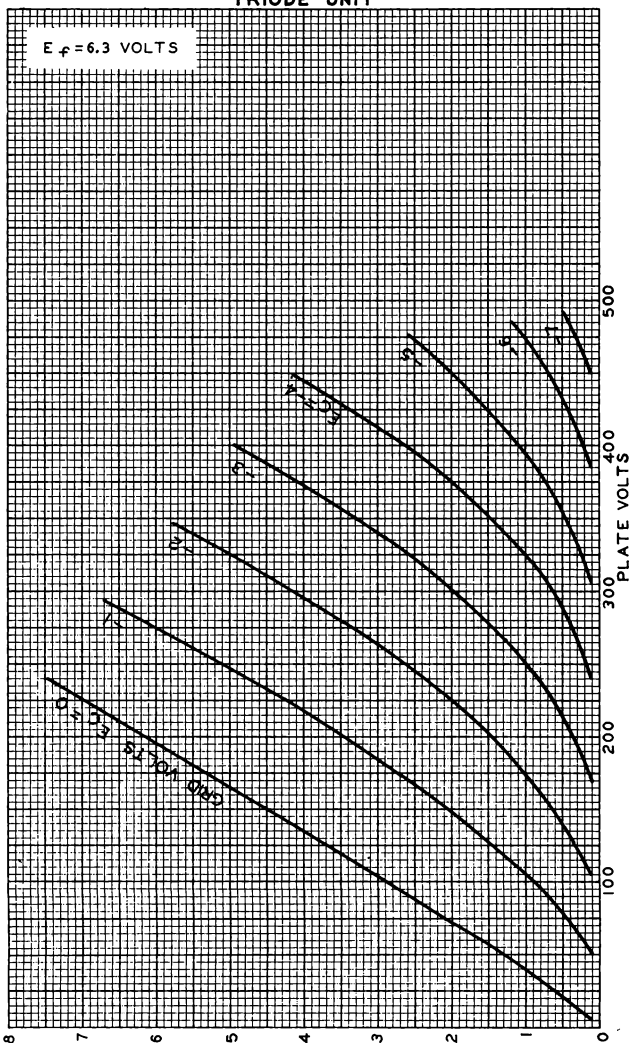
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AT6

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT

6AT6



OCT. 19, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6610



6AT8

TRIODE-PENTODE CONVERTER

9-PIN MINIATURE TYPE

6AT8

The 6AT8 is the same as the 6X8 except for the following items:

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
Triode Unit:			
Grid to plate.	1.5	1.5	μf
Grid to cathode and heater.	2	2.4	μf
Plate to cathode and heater.	0.5	1	μf
Pentode Unit:			
Grid No.1 to plate . .	0.025 max.	0.016 max.	μf
Grid No.1 to cathode, grid No.3, grid No.2, and heater.	4.5	4.7	μf
Plate to cathode, grid No.3, grid No.2, and heater.	0.9	1.6	μf
Pentode grid No.1 to triode plate.	0.05 max.	0.04 max.	μf
Pentode plate to triode plate.	0.05 max.	0.007 max.	μf
Heater to cathode. . .	6.5	6.5 [•]	μf
Pentode Unit Connected as Triode:[▲]			
Grid No.1 to plate and grid No.2.	1.3	1.3	μf
Grid No.1 to cathode, grid No.3, and heater	3	3.3	μf
Plate to cathode, grid No.3, and heater . .	1.7	2.5	μf

Basing Designation for BOTTOM VIEW9DW

Pin 1 - Triode Grid
Pin 2 - Triode Plate
Pin 3 - Cathode
Pin 4 - Heater
Pin 5 - Heater
Pin 6 - Pentode Plate



Pin 7 - Pentode
Grid No.2
Pin 8 - Pentode
Grid No.3
Pin 9 - Pentode
Grid No.1

^o With external shield JETEC No.316 connected to pin No.3, except as noted.

[•] With external shield JETEC No.316 connected to ground.

[▲] Grid No.3 connected to cathode, and grid No.2 connected to plate.

Curves shown under Type 6X8 also apply to the 6AT8

← Indicates a change.

MAR. 1, 1955

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AU4-GT

6AU4-GT

HALF-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts
Current 1.8 amp

Direct Interelectrode Capacitances (Approx.):^o

Plate to Heater and Cathode 8.5 μ f
Cathode to Heater and Plate 11.5 μ f
Heater to Cathode 4.0 μ f

Mechanical:

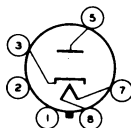
Mounting Position Any
Maximum Overall Length 3-13/16"
Maximum Seated Length 3-1/4"
Maximum Diameter 1-9/32"
Bulb T-9
Base Short Intermediate-Shell Octal 5-
or 6-Pin with External Barriers

(JETEC Nos. B5-85 or B6-60)

Basing Designation for BOTTOM VIEW 4CG

Pin 1: No Connection-
Do Not Use;
or Omitted

Pin 2: No Connection-
Do Not Use



Pin 3: Cathode

Pin 5: Plate

Pin 7: Heater

Pin 8: Heater

DAMPER SERVICE

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[▲]

PEAK INVERSE PLATE VOLTAGE

(Absolute Maximum)[#] 4500[●] max. volts

PEAK PLATE CURRENT 1050 max. ma

DC PLATE CURRENT 175 max. ma

PLATE DISSIPATION 6.0 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to
cathode (Absolute Maximum) 4500^{●*} max. volts

Heater positive with respect to
cathode 300[†] max. volts

^o With no external shield.

[▲] As described in "Standards of Good Engineering Practice Television Broadcast Stations," Federal Communications Commission.

[#] This rating is applicable where the duty cycle of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

[●] Under no circumstances should this absolute value be exceeded.

^{*} The dc component must not exceed 900 volts.

[†] The dc component must not exceed 100 volts.

MARCH 1, 1954

TUBE DEPARTMENT

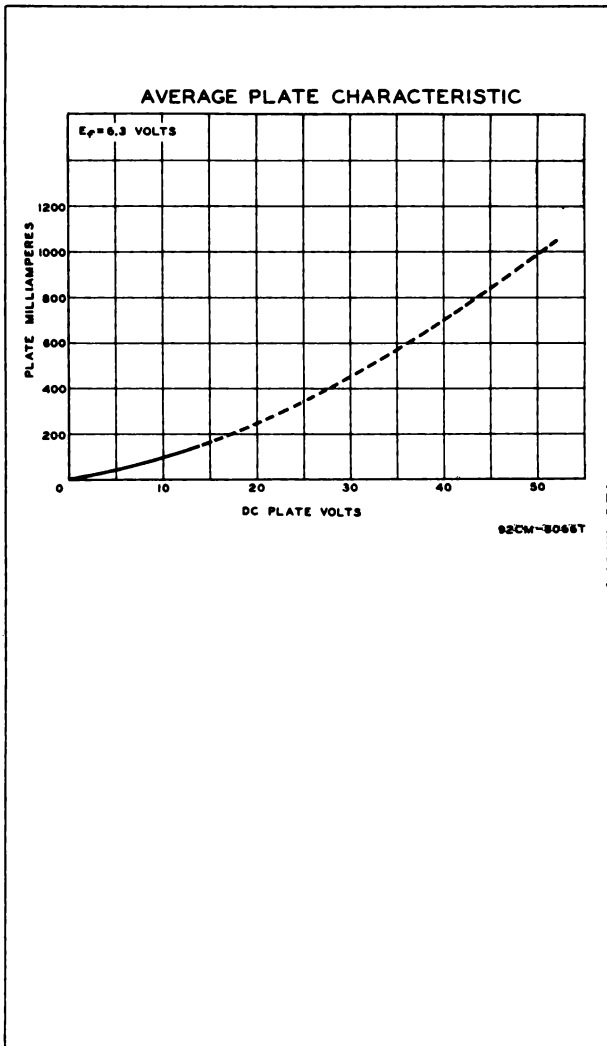
TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AU4-GT



6AU4-GT HALF-WAVE VACUUM RECTIFIER



MARCH 1, 1954

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-8066T



6AU4-GTA

6AU4-GTA HALF-WAVE VACUUM RECTIFIER

For Television Damper Service

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 1.8 amp

Direct Interelectrode Capacitances (Approx.):^oPlate to heater and cathode. 8.5 μ fCathode to heater and plate. 11.5 μ fHeater to cathode. 4 μ f

Mechanical:

Mounting Position. Any

Maximum Overall Length. 3-13/16"

Maximum Seated Length. 3-1/4"

Maximum Diameter. 1-9/32"

Bulb T-9

Base Short Intermediate-Shell Octal 5-Pin

with External Barriers (JETEC No. B5-85),

or Short Intermediate-Shell Octal 6-Pin

with External Barriers (JETEC No. B6-60)

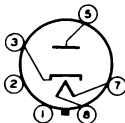
Basing Designation for BOTTOM VIEW. 4CG

Pin 1 $\blacklozenge$ - Same as

Pin 2

Pin 2 - No Connec-

tion - Do

Not Use^e

Pin 3 - Cathode

Pin 5 - Plate

Pin 7 - Heater

Pin 8 - Heater

DAMPER SERVICE

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system^o

PEAK INVERSE PLATE VOLTAGE

(Absolute maximum)* 4500[■] max. volts

PEAK PLATE CURRENT 1150 max. ma

DC PLATE CURRENT 190 max. ma

PLATE DISSIPATION. 6 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode

(Absolute maximum) 4500^{■▲} max. voltsHeater positive with respect to cathode. 300[#] max. volts^o without external shield.[◆] On the 5-pin base, pin 1 as well as pins 4 and 6 is omitted.[●] Socket terminals 1, 2, 4, and 6 should not be used as tie points.[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.^{*} This rating is applicable when the duty cycle of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.^{■, ▲, #}: See next page.

SEPT. 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

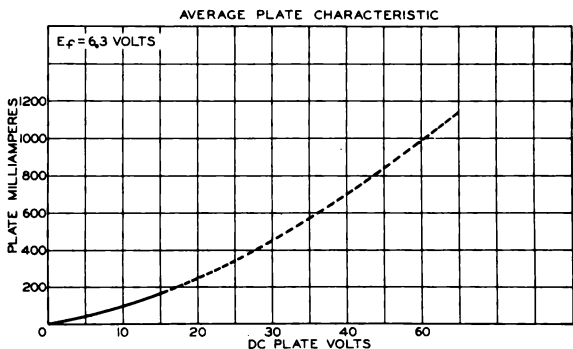
6AU4-GTA



6AU4-GTA

HALF-WAVE VACUUM RECTIFIER

- under no circumstances should this absolute value be exceeded.
- ▲ The dc component must not exceed 900 volts (Absolute maximum).
- * The dc component must not exceed 100 volts.



92CM-8651T

SEPT. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-8651T



6AT8

6AT8

TRIODE-PENTODE CONVERTER

9-PIN MINIATURE TYPE

The 6AT8 is the same as the 6X8 except for basing arrangement and capacitances, as indicated below:

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield*	
Triode Unit:			
Grid to plate.	1.6	1.6	$\mu\mu\text{f}$
Input.	2.0	2.4	$\mu\mu\text{f}$
Output	0.45	0.9	$\mu\mu\text{f}$
Pentode Unit:			
Grid No.1 to plate	0.08 max.	0.06 max.	$\mu\mu\text{f}$
Input.	4.3	4.5	$\mu\mu\text{f}$
Output	0.8	1.5	$\mu\mu\text{f}$
Pentode grid No.1 to triode plate.	0.05 max.	0.04 max.	$\mu\mu\text{f}$
Pentode plate to triode plate	0.05 max.	0.007 max.	$\mu\mu\text{f}$
Heater to cathode.	5.5	5.5 [•]	$\mu\mu\text{f}$
Pentode Unit Connected as triode:[▲]			
Grid No.1 to plate	1.3	1.25	$\mu\mu\text{f}$
Input.	3.1	3.4	$\mu\mu\text{f}$
Output	1.5	2.3	$\mu\mu\text{f}$

Basing Designation for BOTTOM VIEW 9AK

Pin 1—Triode Grid
Pin 2—Triode Plate
Pin 3—Cathode
Pin 4—Heater
Pin 5—Heater
Pin 6—Pentode Plate



Pin 7—Pentode
Grid No.2
Pin 8—Pentode
Grid No.3
Pin 9—Pentode
Grid No.1

- * JETEC shield No.315 connected to cathode except as noted.
- JETEC shield No.315 connected to ground.
- ▲ Grid No.3 connected to cathode; grid No.2 connected to plate.

Curves for the 6AT8 are the same as those shown for Type 6X8.

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AU5-GT

BEAM POWER TUBE

6AU5-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 1.25 amp

Direct Interelectrode Capacitances (Approx.):^oGrid No.1 to plate 0.5 μf

Grid No.1 to cathode & grid No.3,

grid No.2, and heater 11.3 μf

Plate to cathode & grid No.3,

grid No.2, and heater 7 μf Transconductance[#] 5600 μmhos ←Mu-Factor, Grid No.2 to Grid No.1[■] 5.9

Mechanical:

Mounting Position Any

Maximum Overall Length 3-5/16"

Maximum Seated Length 2-3/4"

Maximum Diameter 1-9/32"

Bulb T-9

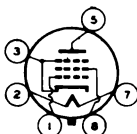
Base Intermediate-Shell Octal 6-Pin (JETEC No.B6-8) ←

or Short Intermediate-Shell Octal 6-Pin (JETEC No.B6-60)

Base Designation for BOTTOM VIEW 6CK

Pin 1-Grid No.1

Pin 2-Heater

Pin 3-Cathode,
Grid No.3

Pin 5-Plate

Pin 7-Heater

Pin 8-Grid No.2

HORIZONTAL DEFLECTION AMPLIFIER

For operation in a 525-line, 30-frame system[□]

Maximum Ratings, Design-Center Values: ←

DC PLATE VOLTAGE 550 max. volts

PEAK POSITIVE-PULSE

PLATE VOLTAGE* (Absolute maximum) 5500[•]max. volts

PEAK NEGATIVE-PULSE PLATE VOLTAGE* -1250 max. volts

DC GRID-No.2 (SCREEN) VOLTAGE[†] 200 max. volts^o with no external shield.[#] For plate volts = 115, grid-no.2 volts = 175, grid-no.1 volts = -20.[■] For plate volts = 100, grid-no.2 volts = 100, grid-no.1 volts = -4.5.[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.^{*} The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.[•] under no circumstances should this absolute value be exceeded.[†] preferably obtained through a series dropping resistor of sufficient magnitude to limit the grid-no.2 input to the rated maximum value.

←Indicates a change.

NOV. 5, 1954

TUBE DIVISION

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AU5-GT



6AU5-GT

BEAM POWER TUBE

PEAK NEGATIVE-PULSE GRID-No.1 (CONTROL-GRID) VOLTAGE	-300 max.	volts
CATHODE CURRENT:		
Peak	400 max.	ma
Average	110 max.	ma
GRID-No.2 INPUT	2.5 max.	watts
PLATE DISSIPATION [◇]	10 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 max.	volts
BULB TEMPERATURE (At hottest point) [▲] . . .	210 max.	°C

Maximum Circuit Values:

→ Grid-No.1-Circuit Resistance	0.47 max.	megohm
--	-----------	--------

VOLTAGE REGULATOR SERVICE*Triode Connection--Grid No.2 Connected to Plate***Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE	300 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Negative bias value	125 max.	volts
Positive bias value	0 max.	volts
CATHODE CURRENT	110 max.	ma
PLATE & GRID-No.2 DISSIPATION (Total)	10 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 max.	volts

◇ An adequate cathode-bias resistor or other suitable means is required to protect the tube in the absence of excitation.

◆ The dc component must not exceed 100 volts.

▲ For tube in vertical position with base down in free space and with natural ventilation, the hottest point on the bulb is in the center of the dome just above open end of cathode sleeve.

→ Indicates a change.

NOV. 5, 1954

TUBE DIVISION

DATA 1

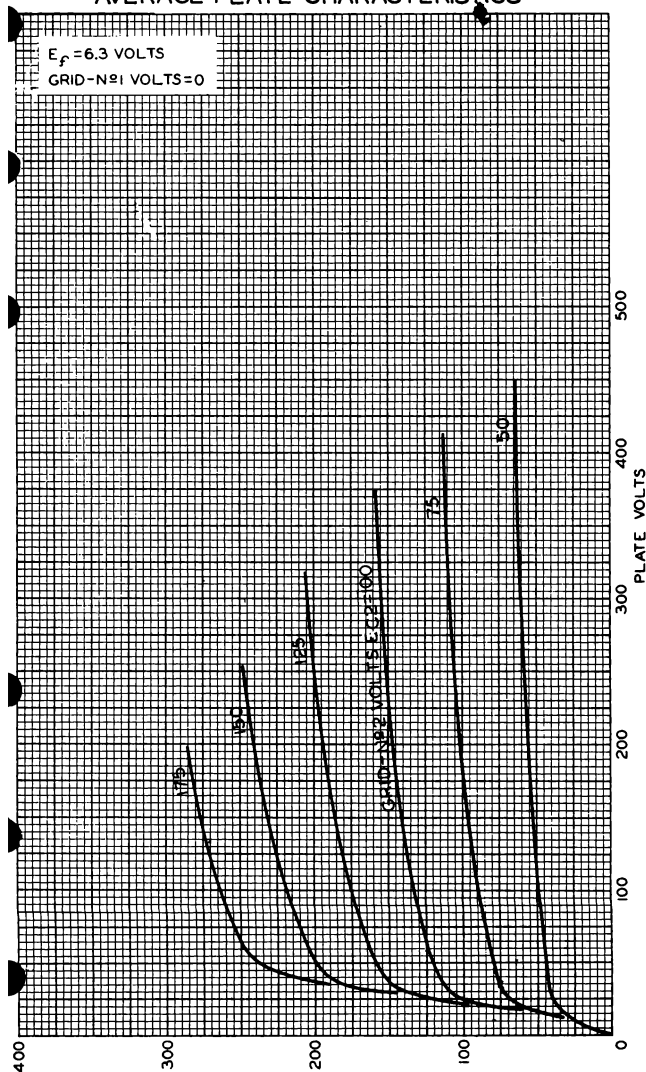
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AU5-GT

6AU5-GT

AVERAGE PLATE CHARACTERISTICS



SEPT. 8, 1949

PLATE MILLIAMPERES

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

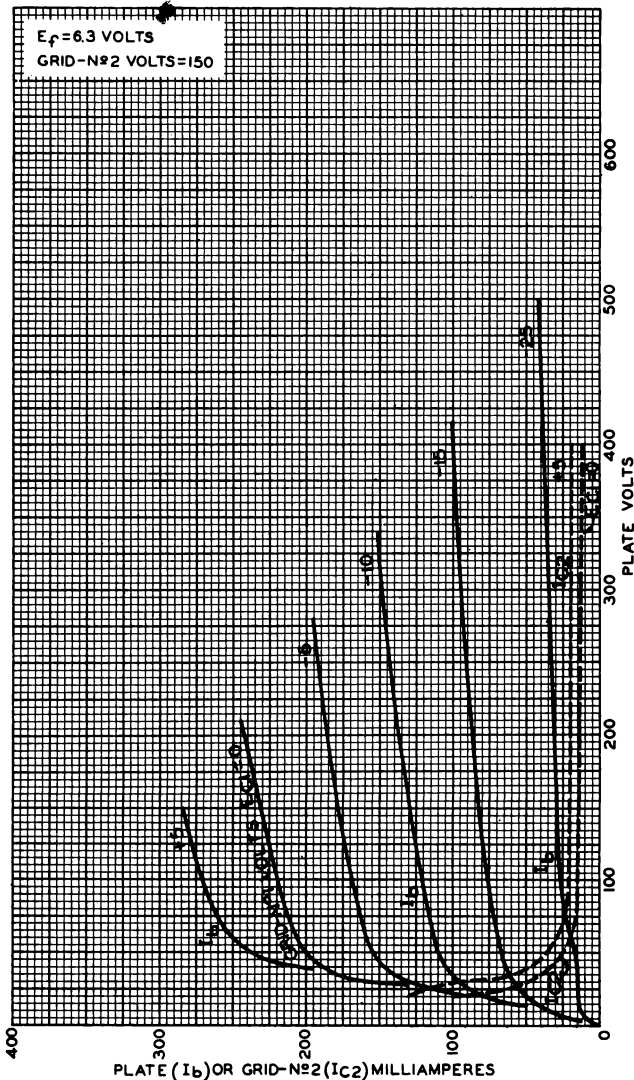
92CM-7355

6AU5-GT



6AU5-GT

AVERAGE PLATE CHARACTERISTICS



AUG. 29, 1949

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7349



6AU6

6AU6

SHARP-CUTOFF PENTODE

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances (No external shield):

Pentode Connection:

Grid No.1 to plate 0.0035 max. μf

Grid No.1 to cathode, heater, grid

No.2, and grid No.3 & internal shield 5.5 μf

Plate to cathode, heater, grid No.2,

and grid No.3 & internal shield 5 μf

Triode Connection, Grids No.2 & No.3 tied to plate:

Grid No.1 to plate, grid No.2, and
grid No.3 & internal shield 2.6 μf ←Grid No.1 to cathode and heater 3.2 μf ←Plate, grid No.2, and grid No.3 &
internal shield to cathode and heater 1.7 μf

Mechanical:

Mounting Position Any

Maximum Overall Length 2-1/8"

Maximum Seated Length 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip) 1-1/2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2 ←

Base Small-Button Miniature 7-Pin (JETEC No.E7-1) ←

Basing Designation for BOTTOM VIEW 7BK1

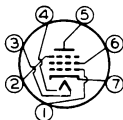
Pin 1-Grid No.1

Pin 2-Grid No.3,

Internal

Shield

Pin 3-Heater



Pin 4-Heater

Pin 5-Plate

Pin 6-Grid No.2

Pin 7-Cathode

AMPLIFIER - Class A₁

Pentode Connection

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts ←

GRID-No.3 (SUPPRESSOR) VOLTAGE 0 max. volts

GRID-No.2 (SCREEN) VOLTAGE See Rating Curve at
front of this Section

GRID-No.2 SUPPLY VOLTAGE 300 max. volts

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value 0 max. volts

PLATE DISSIPATION 3 max. watts

GRID-No.2 INPUT 0.65 max. watt

← Indicates a change.

AUG. 16, 1954

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AU6



6AU6

SHARP-CUTOFF PENTODE

- PEAK HEATER-CATHODE VOLTAGE:
 Heater negative with respect to cathode 180 max. volts
 Heater positive with respect to cathode 100 max. volts

→ Typical Operation and Characteristics:

Plate Supply Voltage	100	250	250	volts
Grid-No.3 (Suppressor)	Connected to cathode at socket			
Grid-No.2 Voltage	100	125	150	volts
Cathode-Bias Resistor	150	100	68	ohms
Plate Resistance (Approx.)	0.5	1.5	1.0	megohms
Transconductance	3900	4500	5200	μ mhos
Grid-No.1 Voltage (Approx.)				
for plate current of 10 μ amp	-4.2	-5.5	-6.5	volts
Plate Current	5.0	7.6	10.6	ma
Grid-No.2 Current	2.1	3.0	4.3	ma

AMPLIFIER - Class A₁*Triode Connection - Grids No.2 and No.3 tied to Plate*

Maximum Ratings, Design-Center Values:

- PLATE VOLTAGE 250 max. volts
- GRID-No.1 (Control-Grid) VOLTAGE:
 Positive bias value 0 max. volts
- PLATE DISSIPATION (Total) 3.2 max. watts
- PEAK HEATER-CATHODE VOLTAGE:
 Heater negative with respect to cathode . 180 max. volts
 Heater positive with respect to cathode . 100 max. volts

Typical Operation and Characteristics:

- Plate Supply Voltage 250 volts
- Cathode-Bias Resistor 330 ohms
- Amplification Factor 36
- Plate Resistance (Approx.) 7500 ohms
- Transconductance 4800 μ mhos
- Plate Current (Total) 12.2 ma

→ Indicates a change.

AUG. 16, 1954

TUBE DIVISION

DATA

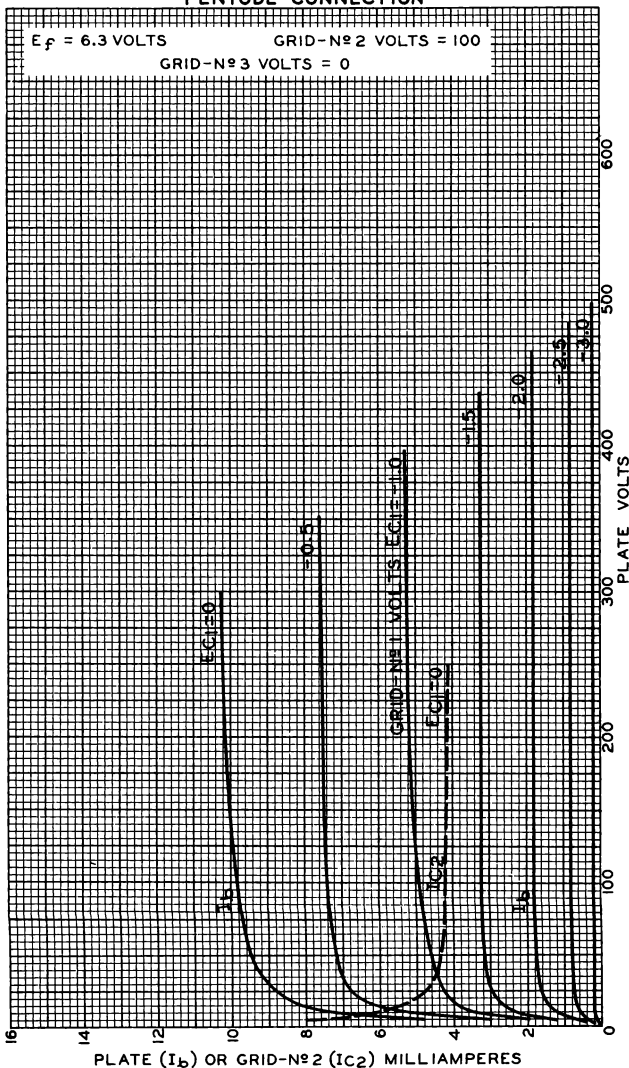
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AU6

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AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



OCT. 23, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

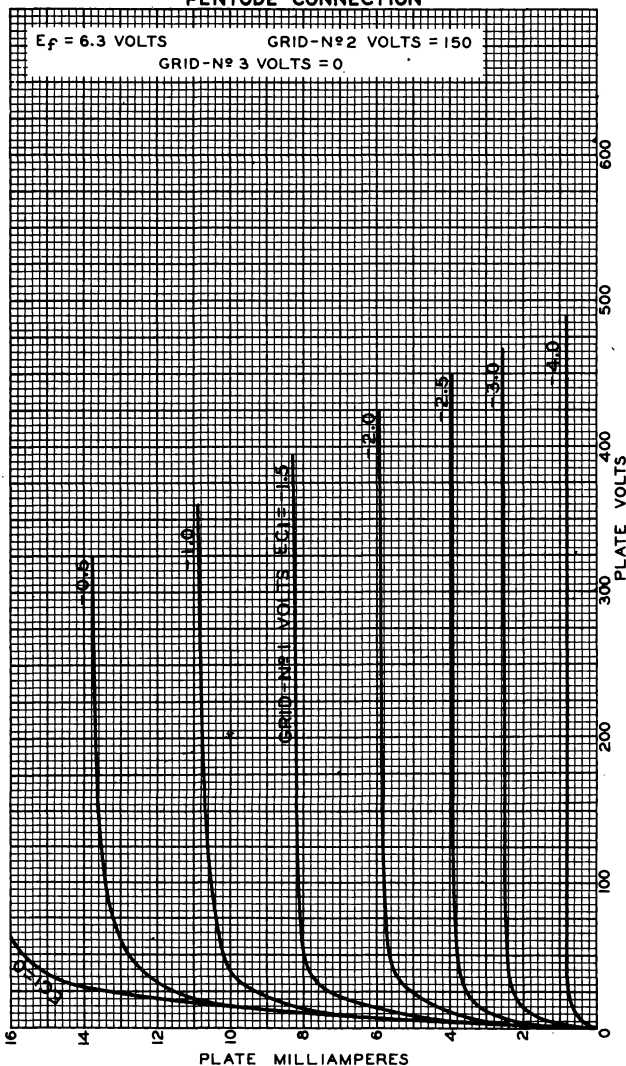
92CM-6611

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AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



OCT. 24, 1945

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6613

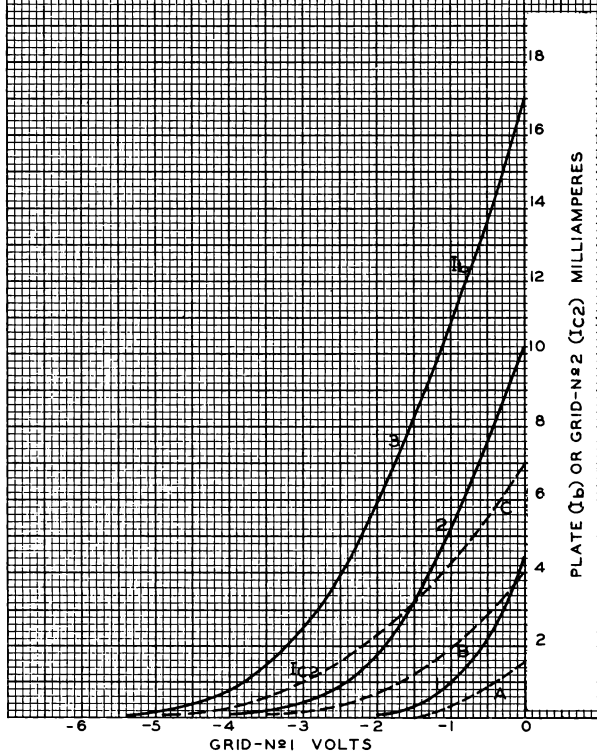


6AU6

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AVERAGE CHARACTERISTICS
PENTODE CONNECTION $E_f = 6.3$ VOLTS PLATE VOLTS=250 GRID-Nº 3 VOLTS=0

CURVES		GRID-Nº 2 VOLTS
I_b —	I_{c2} --	
1	A	50
2	B	100
3	C	150



NOV. 12, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

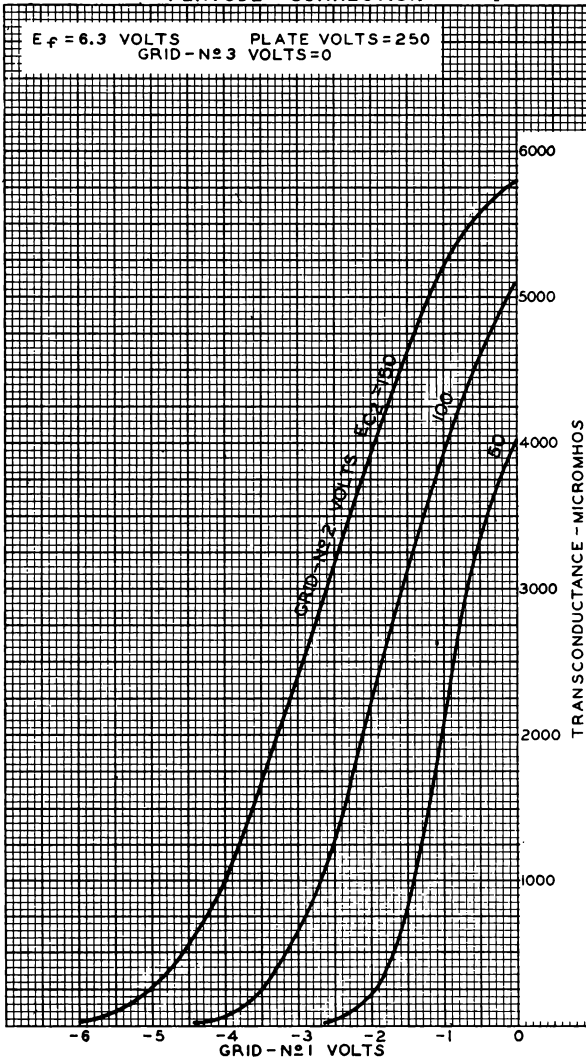
92CM-6623

6AU6



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AVERAGE CHARACTERISTICS PENTODE CONNECTION



OCT. 26, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

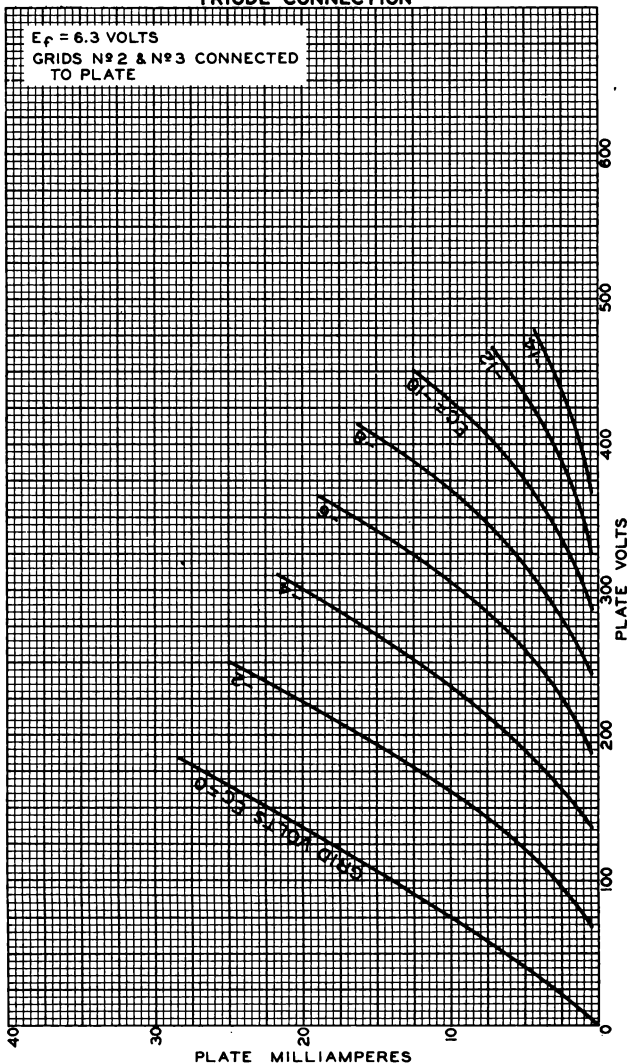
92CM - 6614



6AU6

6AU6

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



MAR. 26, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6854



6AU8

6AU8 MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

Intended for use in equipment having
series heater-string arrangement

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	ac or dc volts
Current	0.6	amp
Warm-up time (Average)	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances:^o

Triode Unit:

Grid to plate	2.2	$\mu\mu\text{f}$
Grid to cathode and heater.	2.6	$\mu\mu\text{f}$
Plate to cathode and heater	0.34	$\mu\mu\text{f}$

Pentode Unit:

Grid No.1 to plate.	0.044	$\mu\mu\text{f}$
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater.	7.5	$\mu\mu\text{f}$
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater.	2.4	$\mu\mu\text{f}$
Triode grid to pentode plate.	0.022 max.	$\mu\mu\text{f}$
Pentode grid No.1 to triode plate	0.006 max.	$\mu\mu\text{f}$
Pentode plate to triode plate	0.12 max.	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier:

	Triode Unit	Pentode Unit	
Plate-Supply Voltage.	150	200	volts
Grid-No.2-Supply Voltage.	—	125	volts
Cathode Resistor.	150	82	ohms
Amplification Factor.	40	—	
Plate Resistance (Approx.)	8200	150000	ohms
Transconductance.	4900	7000	μmhos
Plate Current	9	15	ma
Grid-No.2 Current	—	3.4	ma
Grid-No.1 Voltage (Approx.) for plate current of 100 μamp	-6.5	-8	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length.	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip)	2" $\pm$ 3/32"

^o Without external shield.

6AU8

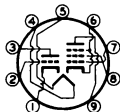


6AU8

MEDIUM-MU TRIODE - SHARP-CUTOFF PENTODE

Maximum Diameter 7/8"
 Dimensional Outline. See General Section
 Bulb T-6-1/2
 Base Small-Button Noval 9-Pin (JETEC No. E9-1)
 Basing Designation for EOTTOM VIEW 9DX

Pin 1 - Triode
 Cathode
 Pin 2 - Triode
 Grid
 Pin 3 - Triode
 Plate
 Pin 4 - Heater
 Pin 5 - Heater



Pin 6 - Pentode
 Cathode,
 Grid No. 3,
 Internal
 Shield
 Pin 7 - Pentode
 Grid No. 1
 Pin 8 - Pentode
 Grid No. 2
 Pin 9 - Pentode
 Plate

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
PLATE VOLTAGE.	300 max.	300 max.	volts
GRID-No. 2 (SCREEN) SUPPLY VOLTAGE.	-	300 max.	volts
GRID-No. 2 VOLTAGE.	-	See Grid-No. 2 Input Rating Chart at front of Receiving Tube Section	
GRID-No. 1 (CONTROL-GRID) VOLTAGE:			
Positive bias value. . .	0 max.	0 max.	volts
PLATE DISSIPATION.	2.5 max.	3 max.	watts
GRID-No. 2 INPUT:			
For grid-No. 2 voltages up to 150 volts.	-	1 max.	watt
For grid-No. 2 voltages between 150 and 300 volts.	-	See Grid-No. 2 Input Rating Chart at front of Receiving Tube Section	

PEAK HEATER-CATHODE

VOLTAGE:

Heater negative with respect to cathode . .	200 max.	200 max.	volts
Heater positive with respect to cathode . .	200 [▲] max.	200 [▲] max.	volts

[▲] The dc component must not exceed 100 volts.



6AU8

6AU8

MEDIUM-MU TRIODE — SHARP-CUTOFF PENTODE

Maximum Circuit Values:

	<i>Triode</i> <i>Unit</i>	<i>Pentode</i> <i>Unit</i>	
Grid-No.1-Circuit Resistance:			
For fixed-bias operation. .	0.5 max.	0.25 max.	megohm
For cathode-bias operation.	1.0 max.	1.0 max.	megohm

OPERATING CONSIDERATIONS

Because the *internal shield* is connected to the cathode and grid No.3, the impedance in the cathode circuit should be kept as low as possible to minimize cross-coupling effects.

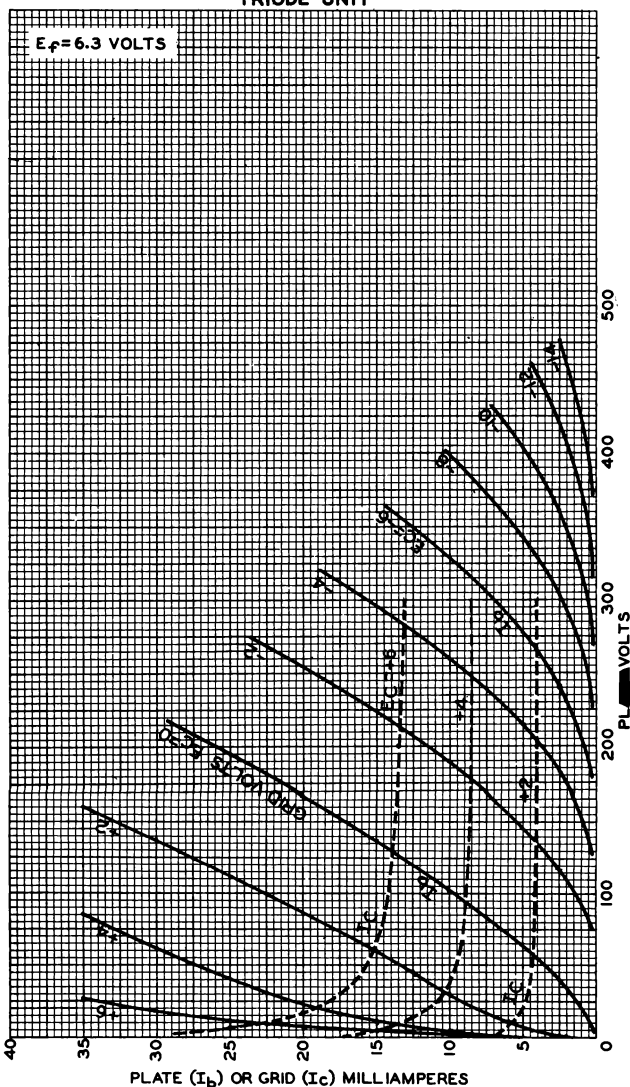
6AU8



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AVERAGE CHARACTERISTICS

TRIODE UNIT



RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

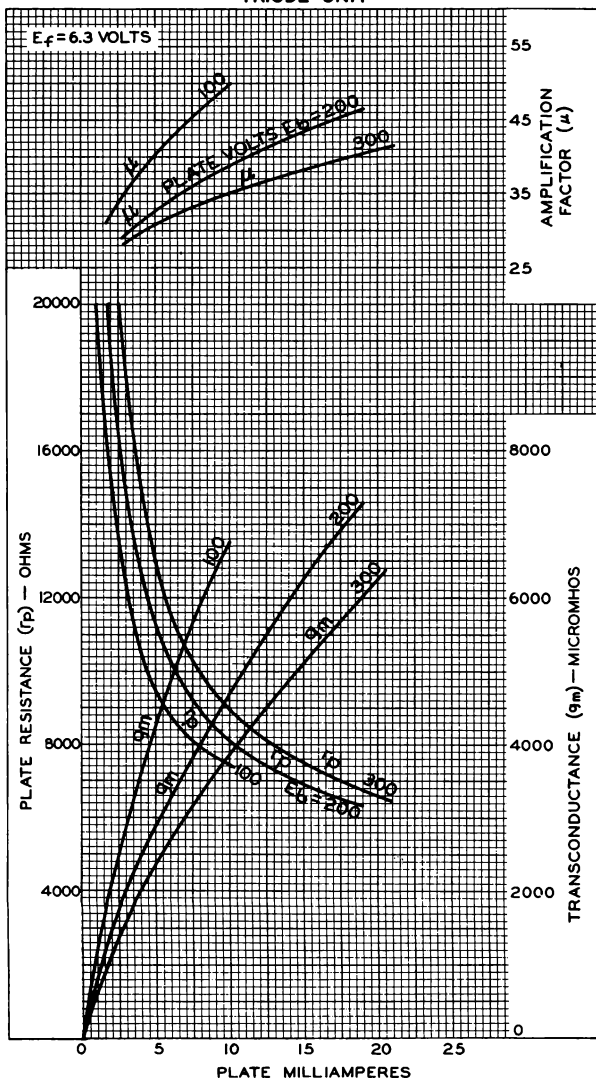
92CM-8796



6AU8

AVERAGE CHARACTERISTICS
TRIODE UNIT

6AU8

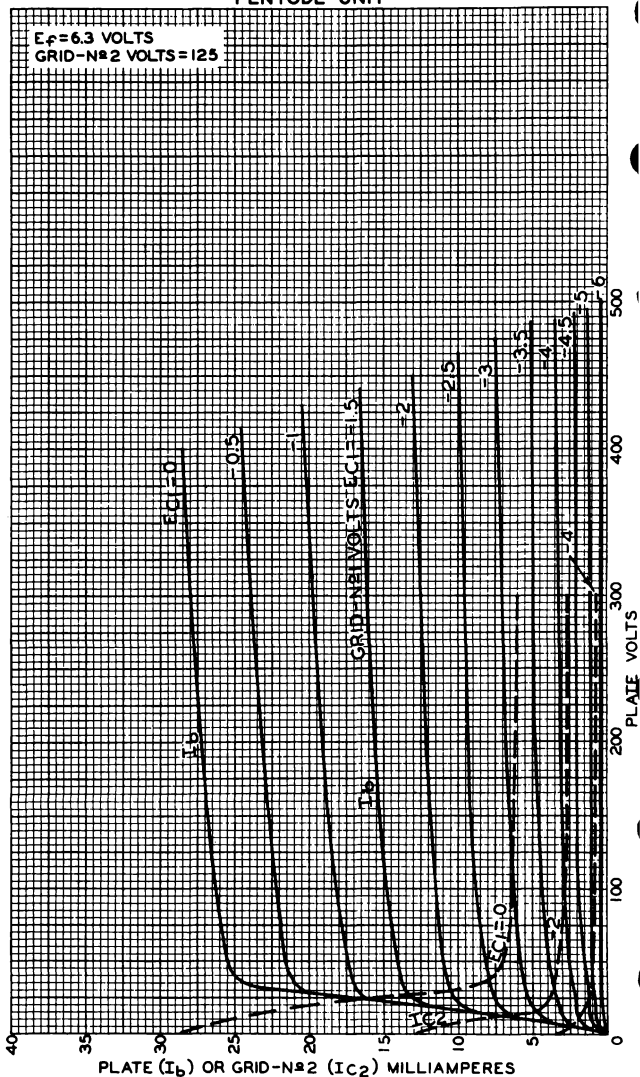


6AU8



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AVERAGE CHARACTERISTICS PENTODE UNIT



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

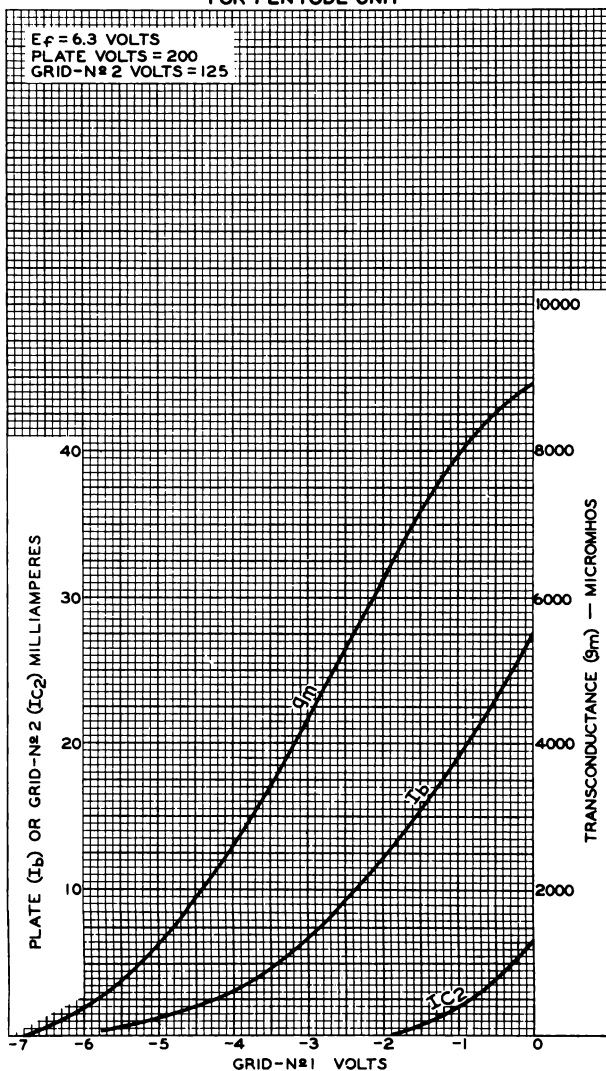
92CM-8804



6AU8

6AU8

AVERAGE CHARACTERISTICS FOR PENTODE UNIT





6AV5-GA

BEAM POWER TUBE

6AV5-GA

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 1.2 amp

Direct Interelectrode Capacitances (Approx.):⁰

Grid No.1 to plate 0.5 μ f

Grid No.1 to cathode & grid No.3, grid

No.2, and heater 14 μ f

Plate to cathode & grid No.3, grid

No.2, and heater 7 μ f

Characteristics, Class A₁ Amplifier:

Plate Voltage. 60 150 250 volts

Grid-No.2 Voltage. 150 150 150 volts

Grid-No.1 Voltage. 0 -22.5 -22.5 volts

Mu-Factor, Grid No.2 to

Grid No.1. - 4.3 -

Plate Resistance (Approx.) . . . - 20000 ohms

Transconductance - 5500 μ mos

Plate Current. 225* - 55 ma

Grid-No.2 Current. 25* - 2.1 ma

Grid-No.1 Voltage (Approx.) for
plate current of 1 ma. . . . - - -4.6 volts

Mechanical:

Mounting Position. Any

Maximum Overall Length 4"

Maximum Seated Length. 3-7/16"

Maximum Diameter 1-9/16"

Bulb T-11, or T-12

Base:

For T-11 bulb. Short Medium-Shell Octal 6-Pin
with External Barriers, Style A (JETEC No.B6-112)

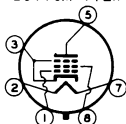
For T-12 bulb. Short Medium-Shell Octal 6-Pin
with External Barriers, Style B (JETEC No.B6-120)

Basing Designation for BOTTOM VIEW 6CK

Pin 1 - Grid No.1

Pin 2 - Heater

Pin 3 - Cathode,
Grid No.3



Pin 5 - Plate

Pin 7 - Heater

Pin 8 - Grid No.2

⁰ Without external shield.

* These values can be measured by a method involving a recurrent wave form such that the cathode current, grid-No.2 input, and plate dissipation will be kept within ratings in order to prevent damage to the tube.

6AV5-GA



6AV5-GA

BEAM POWER TUBE

HORIZONTAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:*For operation in a 525-line, 30-frame system[□]*

DC PLATE VOLTAGE	550 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum) [●]	5500 [■] max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1250 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	175 max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE	300 max.	volts
CATHODE CURRENT:		
Peak	400 max.	ma
Average	110 max.	ma
GRID-No.2 INPUT	2.5 max.	watts
PLATE DISSIPATION [†]	11 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)	210 max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For grid-resistor-bias operation[†]. . . . 0.47 max. megohm

□ As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

■ Under no circumstances should this absolute value be exceeded.

● The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

† It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.

▲ The dc component must not exceed 100 volts.



6AV5-GT

6AV5-GT

BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 1.2 amp

Direct Interelectrode Capacitances:^oGrid No.1 to Plate 0.7 μf Input 14 μf Output 7 μf ^o With no external Shield.Characteristics, Amplifier Class A₁:Plate Voltage 60^a 150 250 voltsGrid-No.2 (Screen) Voltage . . . 150^a 150 150 volts

Grid-No.1 (Control-Grid) Voltage . 0 -22.5 -22.5 volts

Mu-Factor, Grid No.2 to Grid No.1 - 4.3 - ohms

Plate Resistance - - 20000 μhos Transconductance - - 5500 μhos

Plate Current 225 - 55 ma

Grid-No.2 Current 25 - 2.1 ma

Grid-No.1 Voltage (Approx.)
for plate current of 1 ma . . - - -46 volts

Mechanical:

Mounting Position Any

Maximum Overall Length 3-5/16"

Maximum Seated Length 2-3/4"

Maximum Diameter 1-9/32"

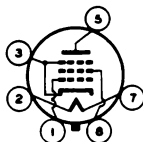
Bulb T-9

Base . . . { Intermediate-Shell Octal 6-Pin (JETEC No. B6-8)
or Short Intermediate-Shell Octal 6-Pin (JETEC No. B6-60)

Basing Designation for BOTTOM VIEW 6CK

Pin 1-Grid No.1

Pin 2-Heater

Pin 3-Cathode,
Grid-No.3

Pin 5-Plate

Pin 7-Heater

Pin 8-Grid No.2

HORIZONTAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system^{*}

DC PLATE SUPPLY VOLTAGE

(Including Boost Voltage) 550 max. volts

^a Applied for very short interval so as not to damage tube.^o As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

APRIL 1, 1953

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AV5-GT



6AV5-GT

BEAM POWER AMPLIFIER

PEAK POSITIVE-PULSE PLATE VOLTAGE*	5500	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE*	1250	max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	175	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE*	300	max.	volts
CATHODE CURRENT:			
Peak	400	max.	ma
DC	110	max.	ma
GRID-No.2 INPUT	2.5	max.	watts
PLATE DISSIPATION#	11	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200	max.	volts
Heater positive with respect to cathode	200	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)	210	max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	0.47	max.	megohm
------------------------------	------	------	--------

* under no circumstances should this absolute value be exceeded.

* The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.

▲ The dc component must not exceed 100 volts.

APRIL 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

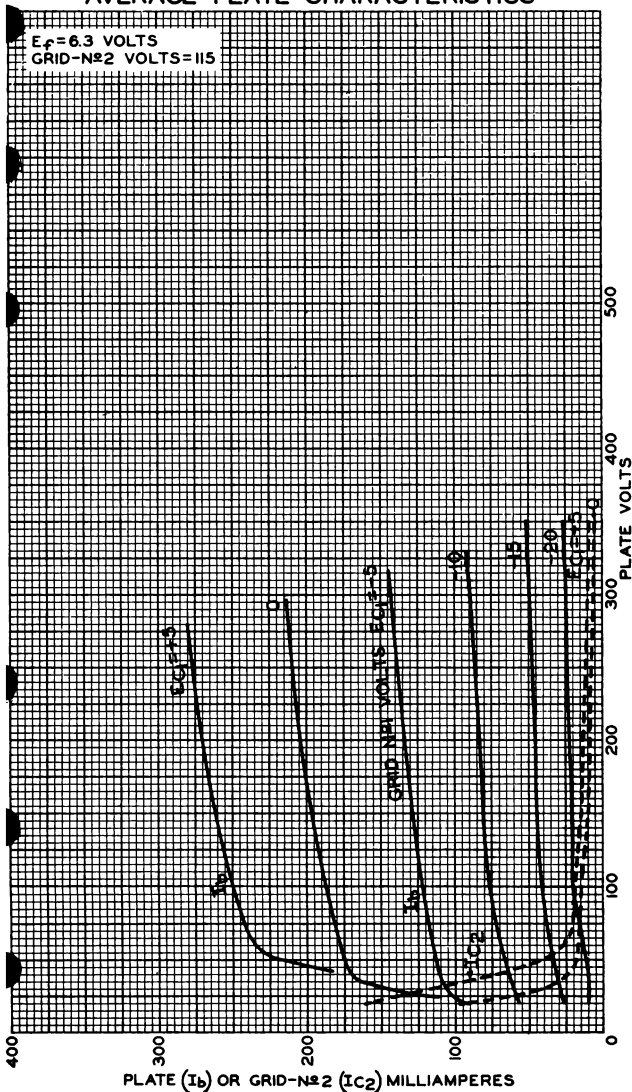
TENTATIVE DATA



6AV5-GT

6AV5-GT

AVERAGE PLATE CHARACTERISTICS



MAR. 10, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7941



6AV6

TWIN DIODE—HIGH-MU TRIODE

MINIATURE TYPE

6AV6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances (No external shield):

Grid to plate. 2 μ f ←Grid to cathode and heater 2.2 μ fPlate to cathode and heater. 0.8 μ fPlate of diode unit No.2 to triode grid. . 0.04 max. μ f

Mechanical:

Mounting Position Any

Maximum Overall Length 2-1/8"

Maximum Seated Length 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip) . 1-1/2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

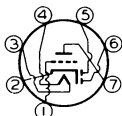
Basing Designation for BOTTOM VIEW 7BT

Pin 1—Triode Grid

Pin 2—Cathode

Pin 3—Heater

Pin 4—Heater



Pin 5—Diode Plate No.2

Pin 6—Diode Plate No.1

Pin 7—Triode Plate

TRIODE UNIT — AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

GRID VOLTAGE:

Positive bias value 0 max. volts ←

PLATE DISSIPATION 0.5 max. watt ←

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . 90 max. volts

Heater positive with respect to cathode . 90 max. volts

Typical Operation and Characteristics:

Plate Voltage 100 250 volts

Grid Voltage -1 -2 volts

Amplification Factor 100 100

Plate Resistance 80000 62500 ohms

Transconductance 1250 1600 μ mhos

Plate Current 0.5 1.2 ma

← Indicates a change

AUG. 16, 1954

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AV6



6AV6

TWIN DIODE—HIGH-MU TRIODE

Typical Operation as Resistance-Coupled Amplifier:

See *RESISTANCE-COUPLED AMPLIFIER CHART*
at front of this Section

DIODE UNITS

Maximum Ratings, Design-Center Values:

PLATE CURRENT (For each diode) 1.0 max. ma

Diode Considerations:

Consideration of these units, including typical circuits and diode curves, is given at the front of this section. Diode biasing of the triode unit of the 6AV6 is not suitable.

Curves for the Triode Unit of the 6AV6 are the same as those shown for Type 12AX7.

AUG. 16, 1954

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



6AW8

6AW8

HIGH-MU TRIODE— SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

Intended for use in equipment having
series heater-string arrangement

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage. 6.3 ac or dc volts

Current. 0.6 amp

Warm-up time (Average) 11 sec

For definition of heater warm-up time and method of determining
it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of
this Section.

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ⁰	
Triode Unit:			
Grid to plate.	2.2	2.2	μf
Grid to cathode and heater	3.2	3.4	μf
Plate to cathode and heater	0.32	1.7	μf
Pentode Unit:			
Grid No.1 to plate	0.036 max.	0.03 max.	μf
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater	11	11	μf
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater	2.8	3.6	μf
Triode grid to pentode plate.	0.03 max.	0.008 max.	μf
Pentode grid No.1 to triode plate	0.008 max.	0.005 max.	μf
Pentode plate to triode plate	0.2 max.	0.05 max.	μf

Mechanical:

Mounting Position. Any
Maximum Overall Length 2-5/8"
Maximum Seated Length. 2-3/8"
Length, Base Seat to Bulb Top (Excluding tip) . . . 2" $\pm$ 3/32"
Maximum Diameter 7/8"
Bulb T-6-1/2

⁰ with external shield JETEC No.315 connected to cathode of unit under test.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AW8



6AW8

HIGH-MU TRIODE— SHARP-CUTOFF PENTODE

Base Small-Button Noval 9-Pin (JETEC No.E9-1)
 Basing Designation for BOTTOM VIEW 9DX

Pin 1 - Triode Cathode
 Pin 2 - Triode Grid
 Pin 3 - Triode Plate
 Pin 4 - Heater
 Pin 5 - Heater



Pin 6 - Pent. Cath.,
 Grid No.3,
 Internal
 Shield
 Pin 7 - Pentode
 Grid No.1
 Pin 8 - Pentode
 Grid No.2
 Pin 9 - Pent. Plate

TRIODE UNIT - Class A₁ Amplifier

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
PLATE DISSIPATION.	1 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts

Typical Operation and Characteristics:

Plate Voltage.	200	volts
Grid Voltage.	-2	volts
Amplification Factor.	70	
Plate Resistance (Approx.)	17500	ohms
Transconductance	4000	μmhos
Grid Voltage (Approx.) for plate current of 10 μamp	-5	volts
Plate Current.	4	ma

Maximum Circuit Values:

Grid-Circuit Resistance:		
For fixed-bias operation	0.5 max.	megohm
For cathode-bias operation	1.0 max.	megohm

PENTODE UNIT - Class A₁ Amplifier

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	300 max.	volts
GRID-No.2 VOLTAGE.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section	
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Negative bias value.	50 max.	volts
Positive bias value.	0 max.	volts
PLATE DISSIPATION.	3 max.	watts

[▲]: See next page.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AW8

6AW8

HIGH-MU TRIODE— SHARP-CUTOFF PENTODE

GRID-No.2 INPUT:

For grid-No.2 voltages up to 150 volts . 1 max. watt

For grid-No.2 voltages between 150

and 300 volts. See Grid-No.2 Input Rating Chart
at front of Receiving Tube Section**PEAK HEATER-CATHODE VOLTAGE:**

Heater negative with respect to cathode 200 max. volts

Heater positive with respect to cathode 200[▲] max. volts**Typical Operation and Characteristics:**

Plate Voltage. 200 volts

Grid-No.2 Voltage. 150 volts

Grid-No.1 Voltage. 0 volts

Cathode-Bias Resistor. 180 ohms

Plate Resistance (Approx.) 0.4 megohm

Transconductance 9000 μ mhosGrid-No.1 Voltage (Approx.) for
plate current of 10 μ amp -10 volts

Plate Current. 13 ma

Grid-No.2 Current. 3.5 ma

Maximum Circuit Values:**Grid-No.1-Circuit Resistance:**

For fixed-bias operation 0.25 max. megohm

For cathode-bias operation 1.0 max. megohm

[▲] The dc component must not exceed 100 volts.

JULY 1, 1955

TUBE DIVISION

TENTATIVE DATA 2

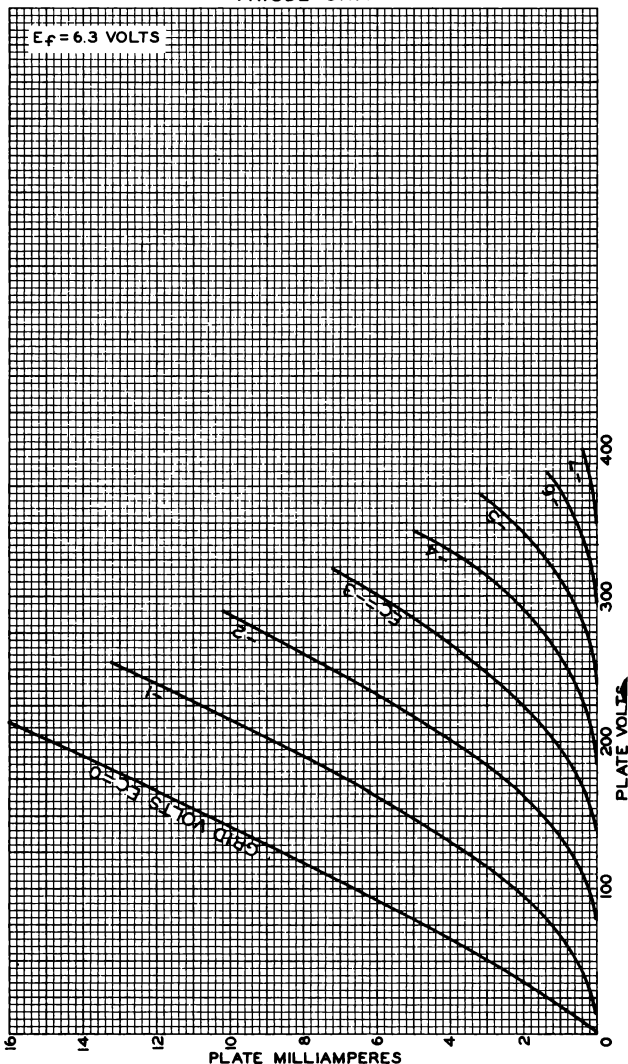
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AW8



6AW8

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



JUNE 14, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

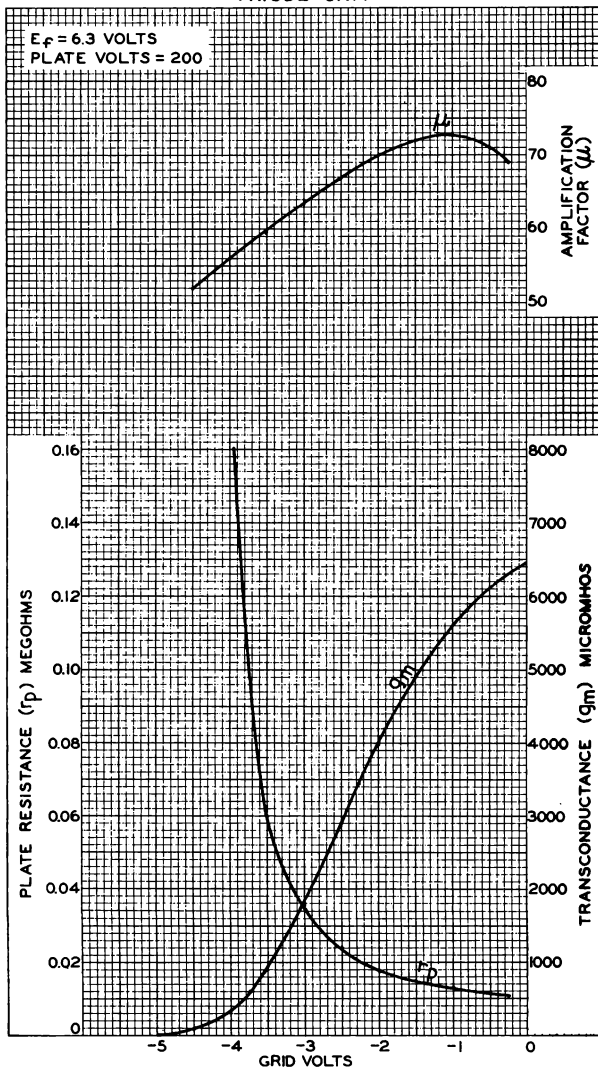
92CM-8644



6AW8

AVERAGE CHARACTERISTICS TRIODE UNIT

6AW8



JUNE 16, 1955

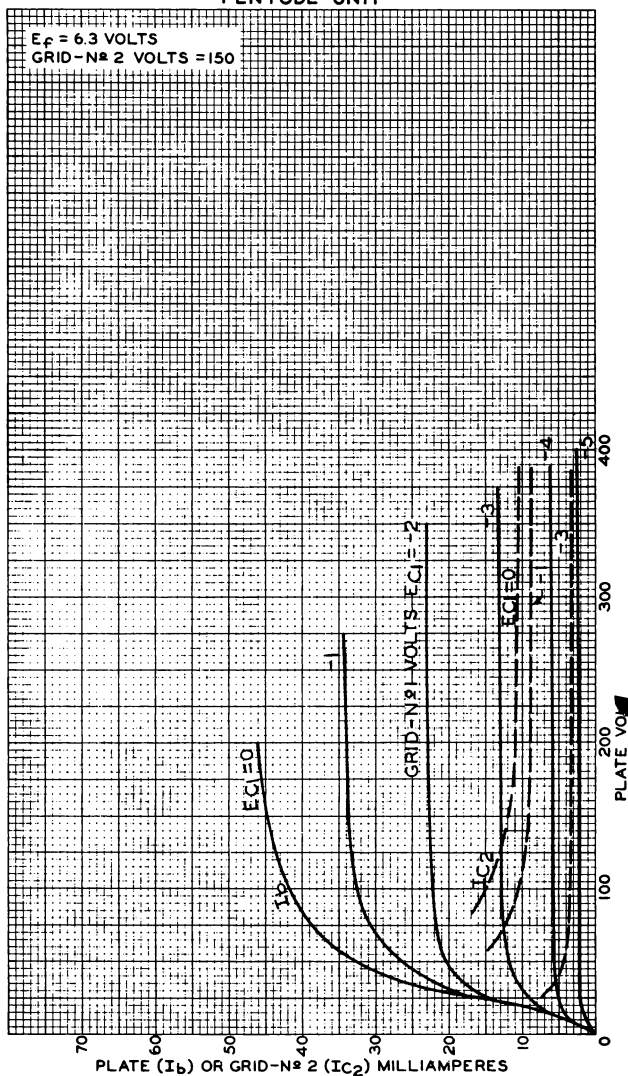
TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8647



6AW8

AVERAGE CHARACTERISTICS PENTODE UNIT



JUNE 14, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

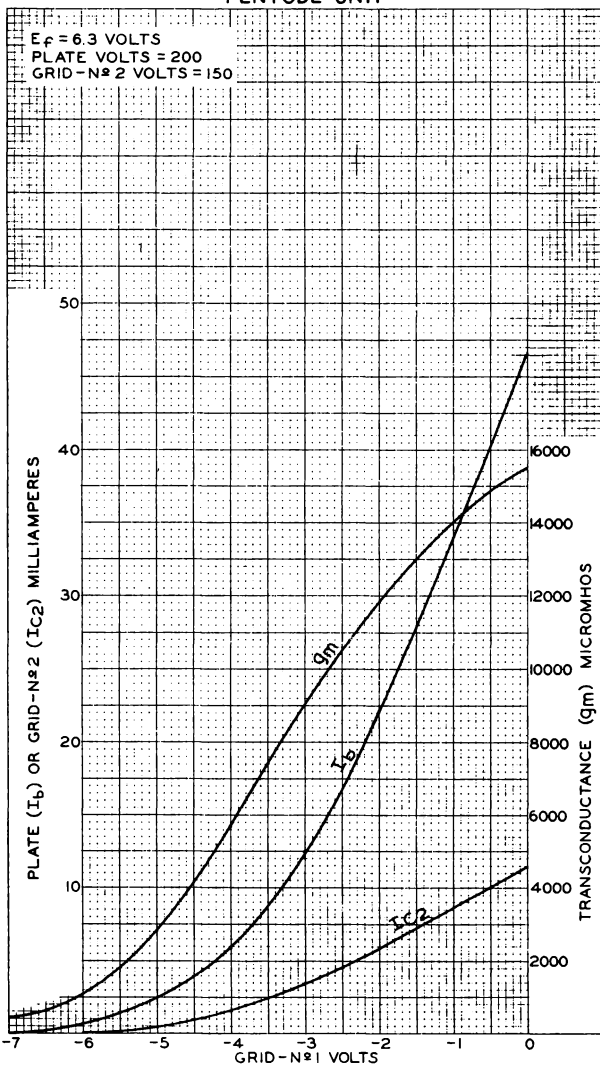
92CM-8645



6AW8

AVERAGE CHARACTERISTICS
PENTODE UNIT

6AW8



JUNE 15, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8646



6AX4-GT

6AX4-GT

HALF-WAVE VACUUM RECTIFIER

For Television Damper Service

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 1.2 amp

Direct Interelectrode Capacitances (Approx.):^oCathode to plate and heater. 8.5 μf Plate to cathode and heater. 5 μf Heater to cathode. 4 μf

Mechanical:

Mounting Position. Any

Maximum Overall Length. 3-5/16"

Maximum Seated Length. 2-3/4"

Maximum Diameter. 1-9/32"

Bulb T-9

Base Intermediate-Shell Octal 6-Pin (JETEC No. B6-8),

Short Intermediate-Shell Octal 6-Pin (JETEC No. B6-48),

Intermediate-Shell Octal 5-Pin (JETEC No. B5-82),

or Short Intermediate-Shell Octal 5-Pin with

External Barriers (JETEC No. B5-85)

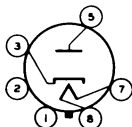
Basing Designation for BOTTOM VIEW. 4CG

Pin 1♦ - Same as

Pin 2

Pin 2 - No Connection - Do

Not Use•



Pin 3 - Cathode

Pin 5 - Plate

Pin 7 - Heater

Pin 8 - Heater

DAMPER SERVICE

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system^o

PEAK INVERSE PLATE VOLTAGE

(Absolute maximum)*. 4400[■] max. volts

PEAK PLATE CURRENT. 750 max. ma

DC PLATE CURRENT. 125 max. ma

PLATE DISSIPATION. 4.8 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode

(Absolute maximum). 4400^{■▲} max. voltsHeater positive with respect to cathode. 300[#] max. volts^o Without external shield.

♦ On the 5-pin bases, pin 1 as well as pins 4 and 6 is omitted.

• Socket terminals 1, 2, 4, and 6 should not be used as tie points.

^o As described in "Standards of Good Engineering Practice Concerning television Broadcast Stations", Federal Communications Commission.

* This rating is applicable when the duty cycle of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

■, ▲, #: See next page.

← Indicates a change.

MAR. 1, 1955

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

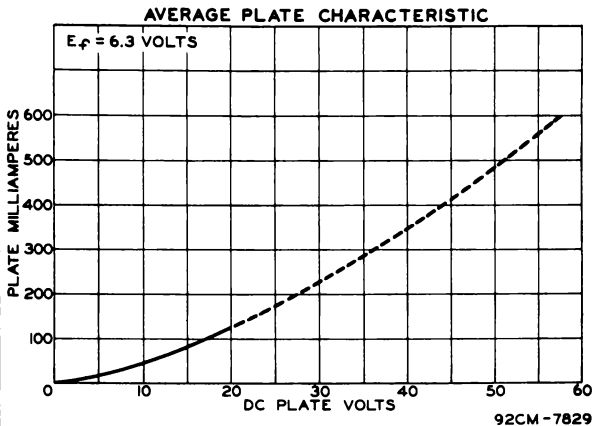
6AX4-GT



6AX4-GT

HALF-WAVE VACUUM RECTIFIER

- Under no circumstances should this absolute value be exceeded.
- ▲ The dc component must not exceed 900 volts (Absolute maximum).
- * The dc component must not exceed 100 volts.



MAR. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-7829



6AX5-GT

FULL-WAVE VACUUM RECTIFIER

6AX5-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac volts

Current. 1.2 amp

Mechanical:

Mounting Position. Any

Maximum Overall Length. 3-5/16"

Maximum Seated Length. 2-3/4"

Maximum Diameter. 1-9/32"

Bulb T-9

Base Short-Intermediate-Shell Octal 6-Pin

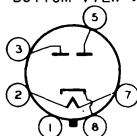
Basing Designation for BOTTOM VIEW G-6S

Pin 1—No Connection

Pin 2—Heater

Pin 3—Plate of

Diode No.2



Pin 5—Plate of

Diode No.1

Pin 7—Heater

Pin 8—Cathode

FULL-WAVE RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE 1250 max. volts

PEAK PLATE CURRENT PER PLATE 375 max. ma

HOT-SWITCHING TRANSIENT PLATE CURRENT

For duration of 0.2 second maximum 2.6 max. amp

AC PLATE SUPPLY VOLTAGE (RMS) PER PLATE. See Rating Chart

DC OUTPUT CURRENT PER PLATE. See Rating Chart

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 450 max. volts

Heater positive with respect to cathode. 450 max. volts

Typical Operation with Capacitor-Input Filter:

AC Plate-to-Plate Supply

Voltage (RMS) 700 900 volts

Filter-Input Capacitor[▲] 10 10 μ f

Effective Plate-Supply Impedance

Per Plate 50 105 ohms

DC Output Voltage at Input to

Filter (Approx.):

At half-load cur. of { 62.5 ma. 395 — volts

At half-load cur. of { 40 ma. — 540 volts

At full-load cur. of { 125 ma. 350 — volts

At full-load cur. of { 80 ma. — 490 volts

Voltage Regulation (Approx.):

Half-load to full-load current 45 50 volts

[▲] Higher values of capacitance than indicated may be used but the effective plate supply impedance may have to be increased to prevent exceeding the maximum rating for hot-switching transient plate current.

FEB. 1, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA 1

6AX5-GT



6AX5 - GT

FULL-WAVE VACUUM RECTIFIER

Typical Operation with Choke-Input Filter:

AC Plate-to-Plate Supply

Voltage (RMS)	700	900	volts
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Filter-Input Choke	10	10	henries
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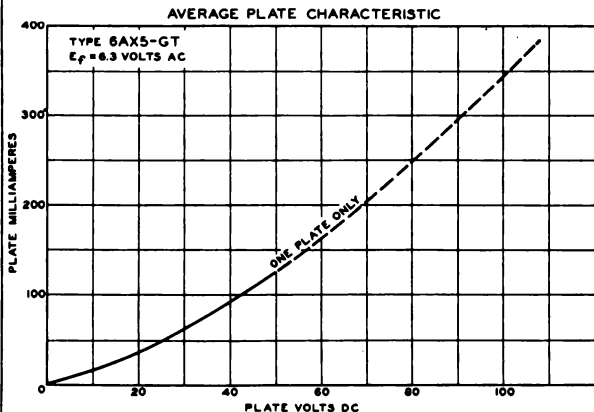
DC Output Voltage at Input to

Filter (Approx.):

At half-load cur. of	{	75 ma.	270	-	volts
		62.5 ma.	-	365	volts
At full-load cur. of	{	150 ma.	250	-	volts
		125 ma.	-	350	volts

Voltage Regulation (Approx.):

Half-load to full-load Current . .	20	15	volts
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RATING CHART and OPERATION CHARACTERISTICS

The *Rating Chart* presents graphically the relationships between maximum ac voltage input and maximum dc output current derived from the fundamental ratings for conditions of capacitor-input and choke-input filters. This graphical presentation gives the equipment designer considerable latitude in choice of operating conditions.

The *Operation Characteristics for Full-Wave Circuit with Capacitor-Input Filter* show not only the typical operating curves for such a circuit, but also show by means of boundary lines "ADK" the limiting current and voltage relationships presented on the Rating Chart.

FEB. 1, 1950

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AX5-GT

6AX5-GT

FULL-WAVE VACUUM RECTIFIER

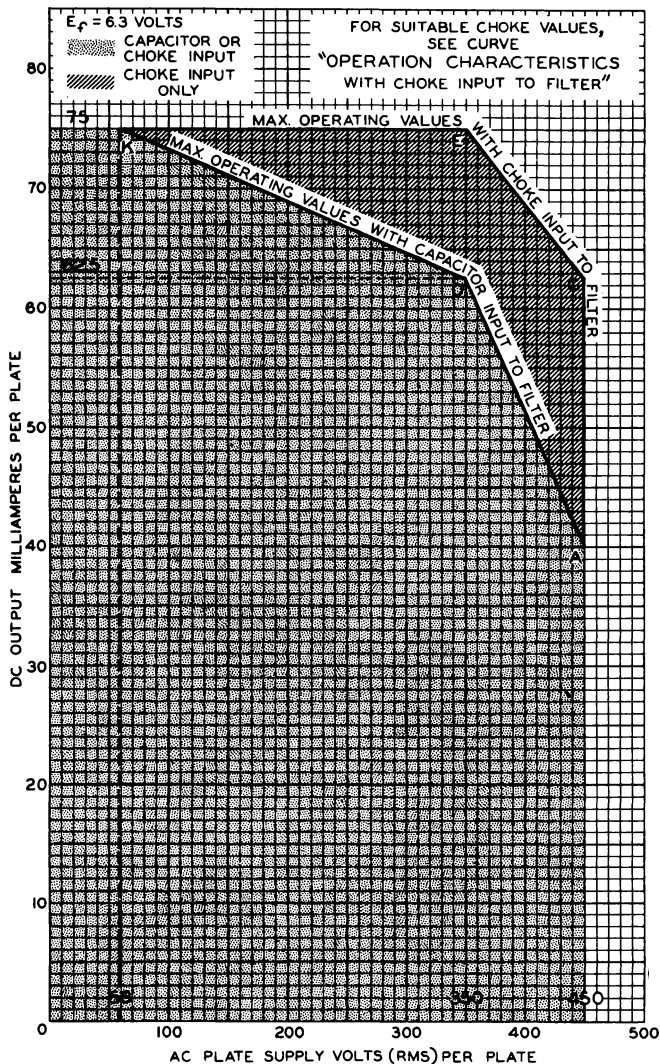
The *Operation Characteristics for Full-Wave Circuit with Choke-Input Filter* show the typical operating curves for such a circuit. They not only show by means of boundary line "CEK" the limiting current and voltage relationships presented on the *Rating Chart*, but also give information as to the effect on regulation of various sizes of chokes. The solid-line curves show the dc voltage outputs which would be obtained if the filter chokes had infinite inductance. The long-dash lines radiating from the zero position are boundary lines for various sizes of chokes as indicated. The intersection of one of these lines with a solid-line curve indicates the point on the curve at which the choke no longer behaves as though it has infinite inductance. To the left of the choke boundary line, the regulation curves depart from the solid-line curves as shown by the representative short-dash regulation curves.

6AX5-GT



6AX5-GT

RATING CHART



OCT. 7, 1949

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

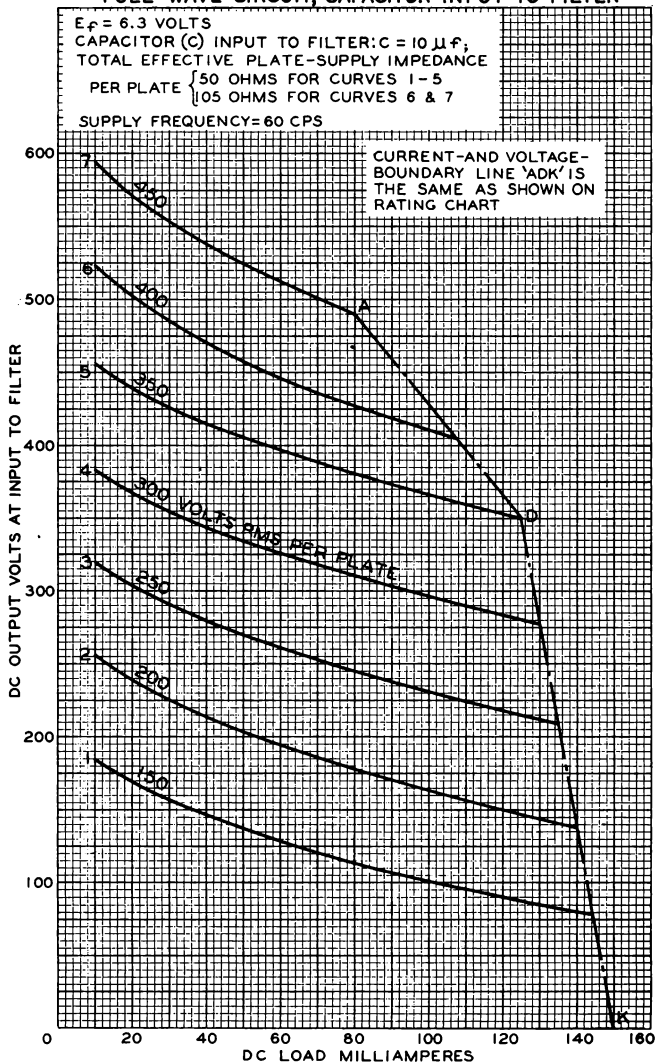
92CM-7383



6AX5-GT

6AX5-GT

OPERATION CHARACTERISTICS FULL-WAVE CIRCUIT, CAPACITOR INPUT TO FILTER



OCT. 7, 1949

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

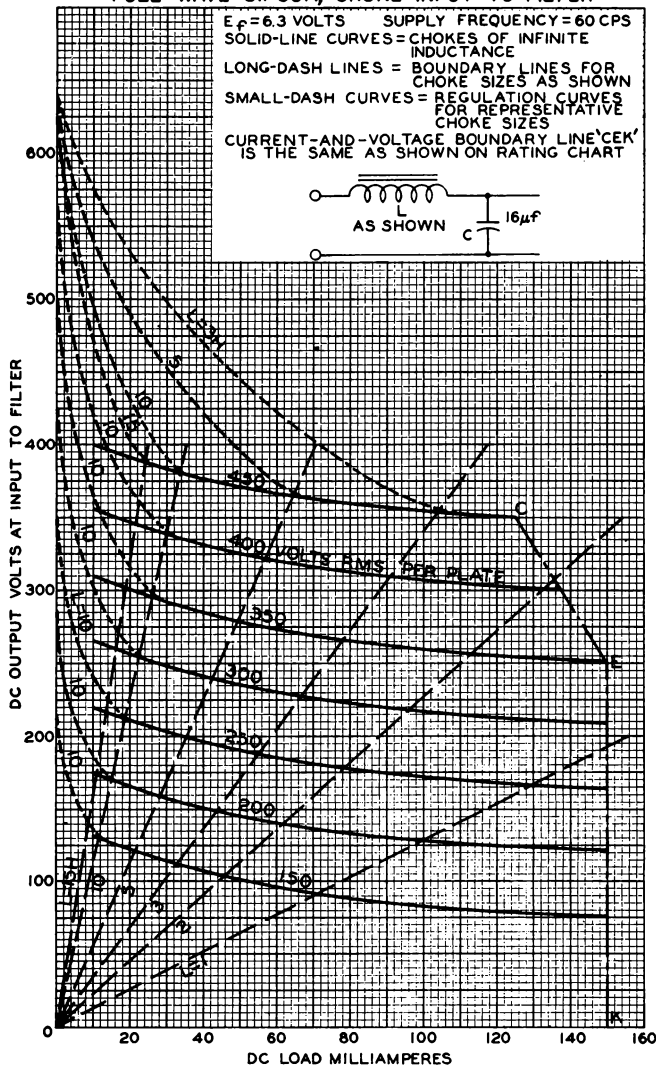
92CM-7382

6AX5-GT



6AX5-GT

OPERATION CHARACTERISTICS FULL-WAVE CIRCUIT, CHOKE INPUT TO FILTER



OCT. 11, 1949

 TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7379

**6AZ8****MEDIUM-MU TRIODE—****SEMIREMOTE-CUTOFF PENTODE**

9-PIN MINIATURE TYPE

6AZ8**GENERAL DATA****Electrical:**

Heater, for Unipotential Cathodes:

Voltage. 6.3 ac or dc volts

Current. 0.45 amp

Direct Interelectrode Capacitances:^o**Triode Unit:**Grid to plate. 1.7 $\mu\mu\text{f}$ Grid to cathode, internal
shield & heater. 2 $\mu\mu\text{f}$ Plate to cathode, internal
shield & heater. 1.7 $\mu\mu\text{f}$ **Pentode Unit:[•]**Grid No.1 to plate 0.02 $\mu\mu\text{f}$ Grid No.1 to cathode,
grid No.2, grid No.3 &
internal shield & heater 6.5 $\mu\mu\text{f}$ Plate to cathode, grid
No.2, grid No.3 &
internal shield & heater 2.2 $\mu\mu\text{f}$ Triode grid to pentode plate 0.027 max. $\mu\mu\text{f}$ Pentode grid No.1 to triode plate. 0.020 max. $\mu\mu\text{f}$ Pentode plate to triode plate. 0.045 max. $\mu\mu\text{f}$ **Characteristics, Class A₁ Amplifier:**

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Plate Supply Voltage	200	200	volts
Grid-No.2 Supply Voltage	—	150	volts
Grid-No.1 Voltage.	-6	—	volts
Cathode-Bias Resistor.	—	180	ohms
Amplification Factor	19	—	
Plate Resistance (Approx.)	5750	300000	ohms
Transconductance :	3300	6000	μmhos
Plate Current.	13	9.5	ma
Grid-No.2 Current.	—	3	ma
Grid-No.1 Voltage (Approx.) for plate current of 10 μamp	-19	—	volts
Grid-No.1 Voltage (Approx.) for transconductance of 10 μmhos	—	-12.5	volts

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-3/16"

Maximum Seated Length. 1-15/16"

Length, Base Seat to Bulb Top (Excluding tip) 1-9/16" $\pm$ 3/32"^o Without external shield.[•] See next page.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AZ8



6AZ8

MEDIUM-MU TRIODE— SEMIREMOTE-CUTOFF PENTODE

Maximum Diameter 7/8"
 Bulb T-6-1/2
 Base Small-Button Noval 9-Pin (JETEC No. E9-1)
 Basing Designation for BOTTOM VIEW 9ED

Pin 1 - Pentode Plate

Pin 2 - Pentode

Grid No.2

Pin 3 - Pentode
Cathode

Pin 4 - Heater

Pin 5 - Pentode Grid
No.3, Internal
Shield, HeaterPin 6 - Pentode
Grid No.1Pin 7 - Triode
CathodePin 8 - Triode
PlatePin 9 - Triode
Grid

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

	Triode Unit	Pentode Unit*	
PLATE VOLTAGE.	300 max.	300 max.	volts
GRID-No.3 (SUPPRESSOR) VOLTAGE.	-	See Operating Considerations	
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	-	300 max.	volts
GRID-No.2 VOLTAGE.	-	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section	
GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Positive bias value.	0 max.	0 max.	volts
PLATE DISSIPATION.	2.5 max.	2 max.	watts
GRID-No.2 INPUT:			
For grid-No.2 voltages up to 150 volts.	-	0.5 max.	watt
For grid-No.2 voltages between 150 and 300 volts.	-	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section	

PEAK HEATER-CATHODE

VOLTAGE:

Heater negative with respect to cathode	200 max.	▲	volts
Heater positive with respect to cathode	200#max.	▲	volts

* The pentode unit is provided with a separate base pin for the cathode and for grid No.3 and internal shield which are connected internally to one of the heater leads. This arrangement facilitates the use of an unbypassed cathode resistor to minimize changes in input resistance and input capacitance with bias without causing oscillation which otherwise might occur if grid No.3 were internally connected to the cathode.

The dc component must not exceed 100 volts.

▲: See next page.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AZ8

6AZ8
MEDIUM-MU TRIODE—
SEMIREMOTE-CUTOFF PENTODE

Maximum Circuit Values:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Grid-No.1-Circuit Resistance:*			
For fixed-bias operation. . .	0.5 max.	0.25 max.	megohm
For cathode-bias operation. .	1.0 max.	1.0 max.	megohm

OPERATING CONSIDERATIONS

Because *grid No.3* is connected within the tube to one side of the heater (pin No.5), it is important that pin No.5 be connected to ground to maintain grid No.3 at ground potential. If this precaution is not observed and pin No.5 is connected to the ungrounded side of the heater supply, grid No.3 will operate at the heater-supply voltage. As a result, tube characteristics will be changed. Furthermore, if an ac heater supply is used, ac voltage will be applied to grid No.3 with resulting amplitude modulation of the grid-No.3 voltage.

▲ The heater-cathode voltage should not exceed the value of the operating cathode bias. If the heater-cathode voltage exceeds the operating cathode bias value, grid No.3 will be made negative with respect to cathode, and thus possibly cause a change in tube characteristics.

* If either unit is operated at maximum rated conditions, grid-No.1-circuit resistances for both units should not exceed the stated values.

MAR. 1, 1955

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TENTATIVE DATA 2

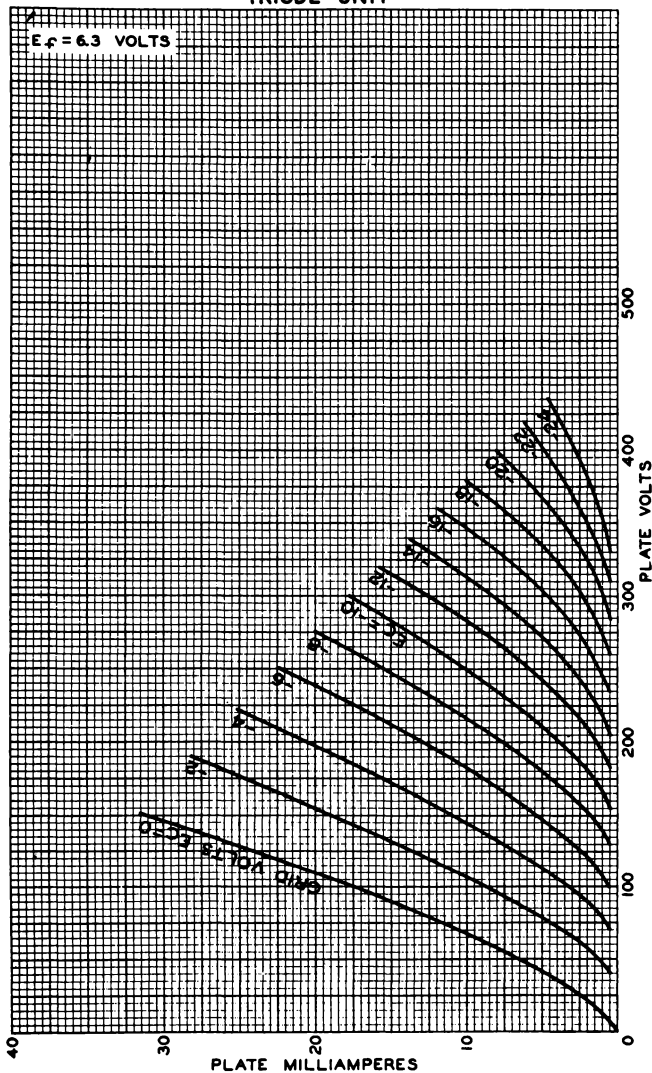
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6AZ8



6AZ8

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



FEB. 2, 1955

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

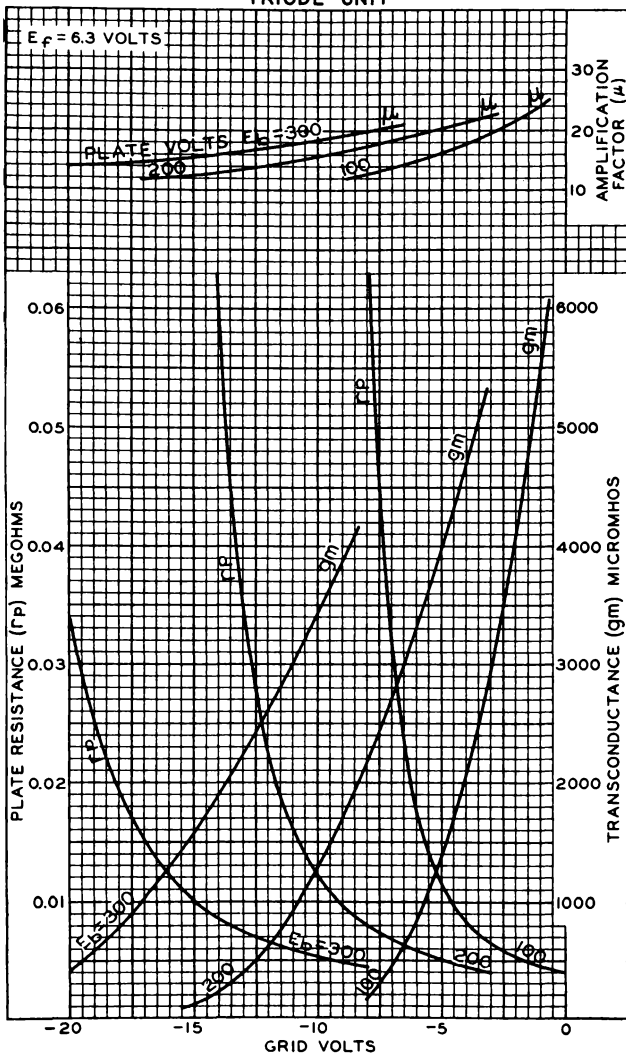
92CM-8520



6AZ8

6AZ8

AVERAGE CHARACTERISTICS TRIODE UNIT



FEB. 2, 1955

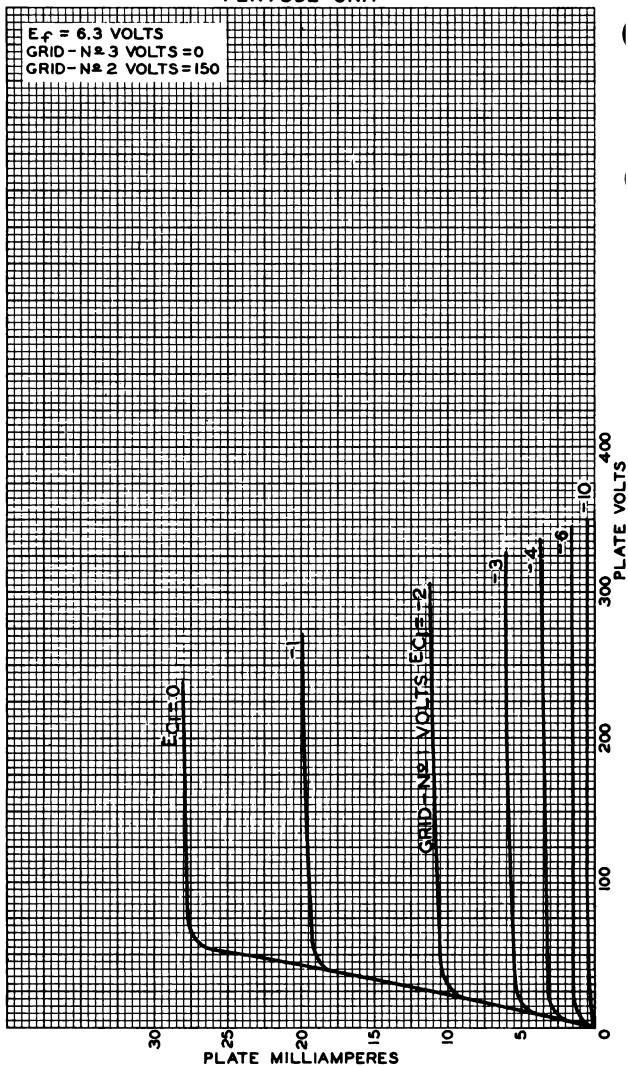
TUBE DIVISION
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92CM-8519

6AZ8



6AZ8

AVERAGE PLATE CHARACTERISTICS
PENTODE UNIT

FEB. 3, 1955

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

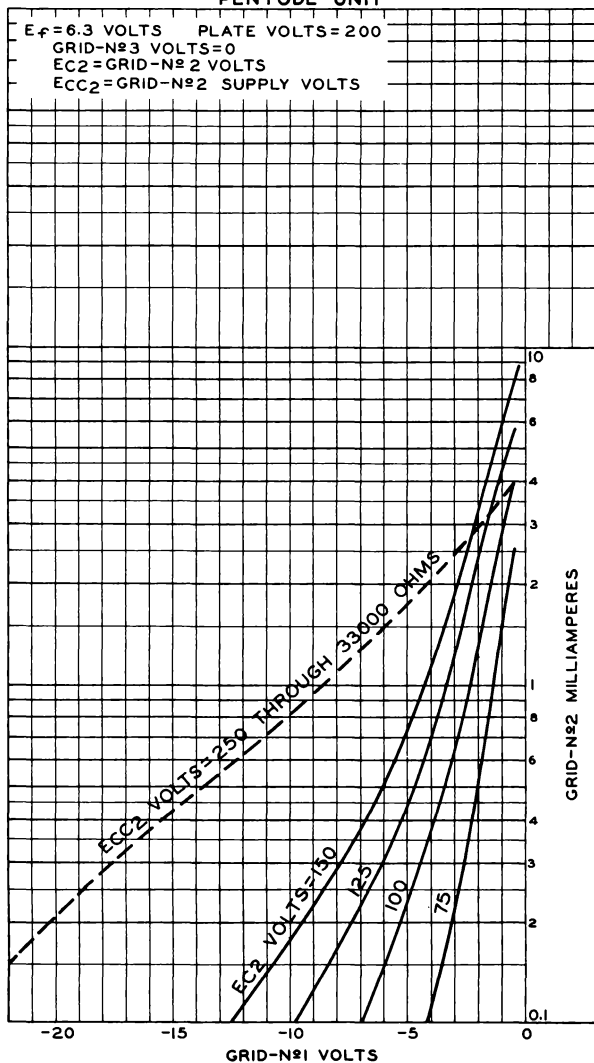
92CM - 8525



6AZ8

6AZ8

AVERAGE CHARACTERISTICS PENTODE UNIT



FEB. 2, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

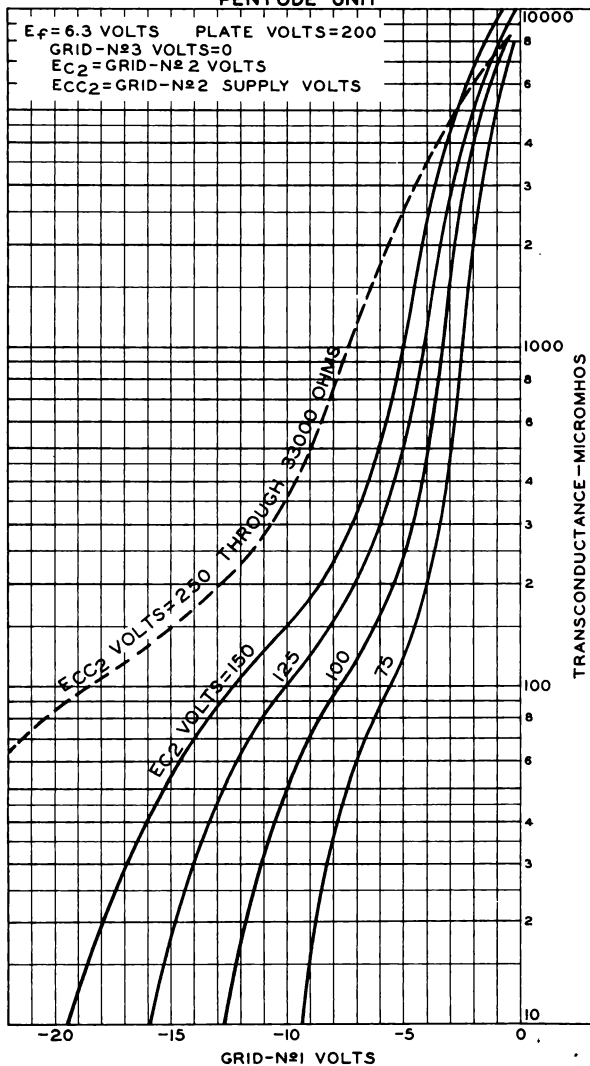
92CM-8521

6AZ8



6AZ8

AVERAGE CHARACTERISTICS PENTODE UNIT



FEB. 2, 1955

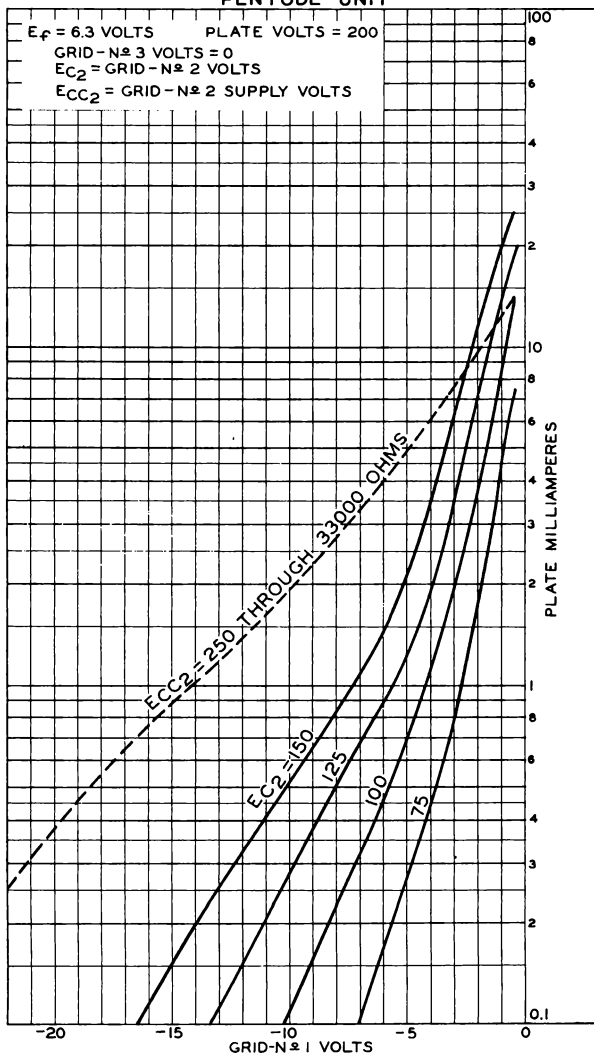
TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8522



6AZ8

AVERAGE CHARACTERISTICS PENTODE UNIT



FEB. 2, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM - 8523

RCA
6B4-G

6B4-G
6B5

POWER AMPLIFIER TRIODE

Filament	Coated	
Voltage	6.3	a-c or d-c volts
Current	1.0	amp.
Maximum Overall Length		5-5/16"
Maximum Seated Height		4-3/4"
Maximum Diameter		2-1/16"
Bulb		ST-16
Base		Medium Shell Octal 8-Pin
Pin 1 - No Connection		Pin 5 - Grid
Pin 2 - Filament		Pin 6 - No Connection
Pin 3 - Plate		Pin 7 - Filament
Pin 4 - No Connection		Pin 8 - No Connection
Mounting Position		Any



BOTTOM VIEW (G-5S_B)

Maximum Ratings, and Typical Operating Conditions for the 6B4-G are the same as for the Type 6A3.

Curves for the 6B4-G are essentially the same as those shown for Type 2A3.

6B5



DIRECT-COUPLED POWER AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.8	amp.
Maximum Overall Length		4-11/16"
Maximum Seated Height		4-1/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium 6-Pin
Pin 1 - Heater		Pin 4 - Input-Triode
Pin 2 - Output-Triode		Grid
Pin 3 - Input-Triode		Pin 5 - Cathode
Pin 6 - Heater		Pin 6 - Heater
Mounting Position		Any



BOTTOM VIEW (6AS)

For additional data, refer to Type 6N6-G.

← Indicates a change.

May 1, 1941

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



6B7

6B7

TWIN DIODE—REMOTE-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances (Pentode Unit):

Grid No.1 to Plate^o. . . 0.007 max. μf Input. 3.5 μf Output. 9.5 μf ^o With external shield connected to cathode.

Mechanical:

Mounting Position. Any

Maximum Overall Length. 4-17/32"

Seated Length. 3-25/32" $\pm$ 1/8" ←

Maximum Diameter. 1-9/16"

Bulb ST-12

Cap. Small

Base Small-Shell Small 7-Pin

Basing Designation for BOTTOM VIEW. 7D

Pin 1—Heater

Pin 2—Pentode

Plate

Pin 3—Pentode

Grid No.2

Pin 4—Diode No.2

Plate



Pin 5—Diode No.1

Plate

Pin 6—Cathode,

Pentode

Grid No.3

Pin 7—Heater

Cap — Pentode

Grid No.1

PENTODE UNIT
AMPLIFIER—Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE. 125 max. volts

GRID-No.2 SUPPLY VOLTAGE. 300 max. volts

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value. 0 max. volts

PLATE DISSIPATION. 2.25 max. watts

GRID-No.2 DISSIPATION. 0.3 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . . . 90 max. volts

Heater positive with respect to cathode . . . 90 max. volts

Characteristics:

Plate Voltage. 100 180 250 250 volts

Grid-No.2 Voltage. 100 75 100 125 volts

Grid-No.1 Voltage. -3 -3 -3 -3 volts

Plate Resistance (Approx.) . . . 0.3 1.0 0.8 0.6 megohm

Transconductance 950 840 1000 1125 μmhos

(continued on next page)

←Indicates a change.

DEC. 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6B7



6B7

TWIN DIODE—REMOTE-CUTOFF PENTODE

Grid-No.1 Bias (Approx.) for					
Cathode-Current Cutoff . .	-17	-13	-17	-21	volts
Plate Current.	5.8	3.4	6	9	ma
Grid-No.2 Current.	1.7	0.9	1.5	2.3	ma

DIODE UNITS

Maximum Ratings, Design-Center Values:

→ PLATE CURRENT (For Each Diode) 1.0 max. ma

Diode Considerations:

See front of this Section.

*For additional data, refer to RESISTANCE-COUPLED
AMPLIFIER CHARTS at the front of this Section.*

*The curve shown under type 2B7 also applies to
the pentode unit of the 6B7.*

→ Indicates a change.

DEC. 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

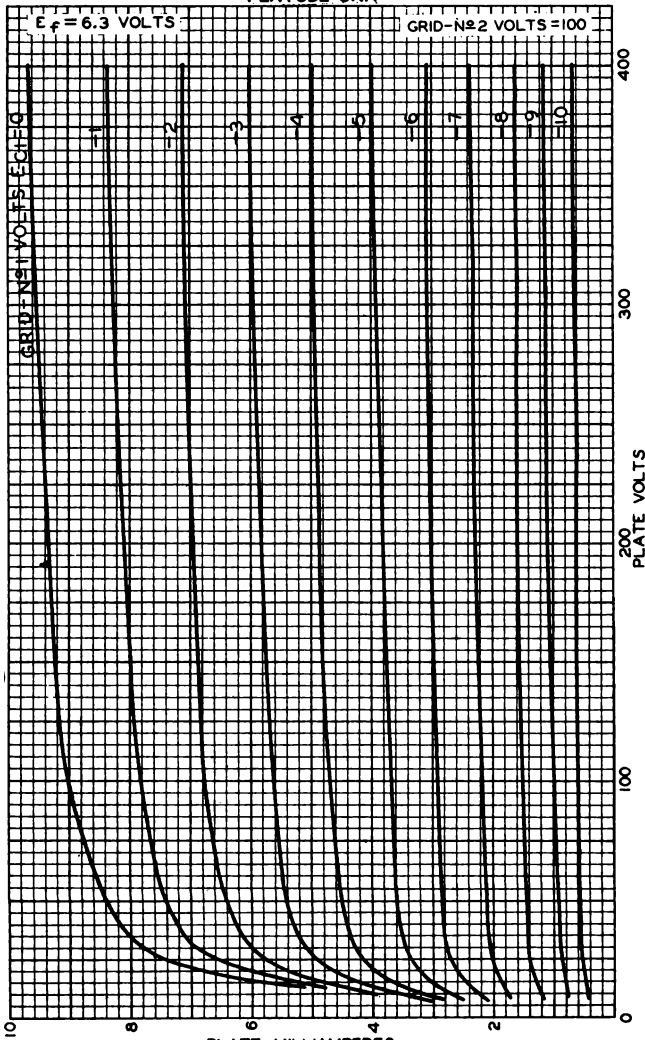
DATA



6B7

6B7

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT



FEB. 17, 1938

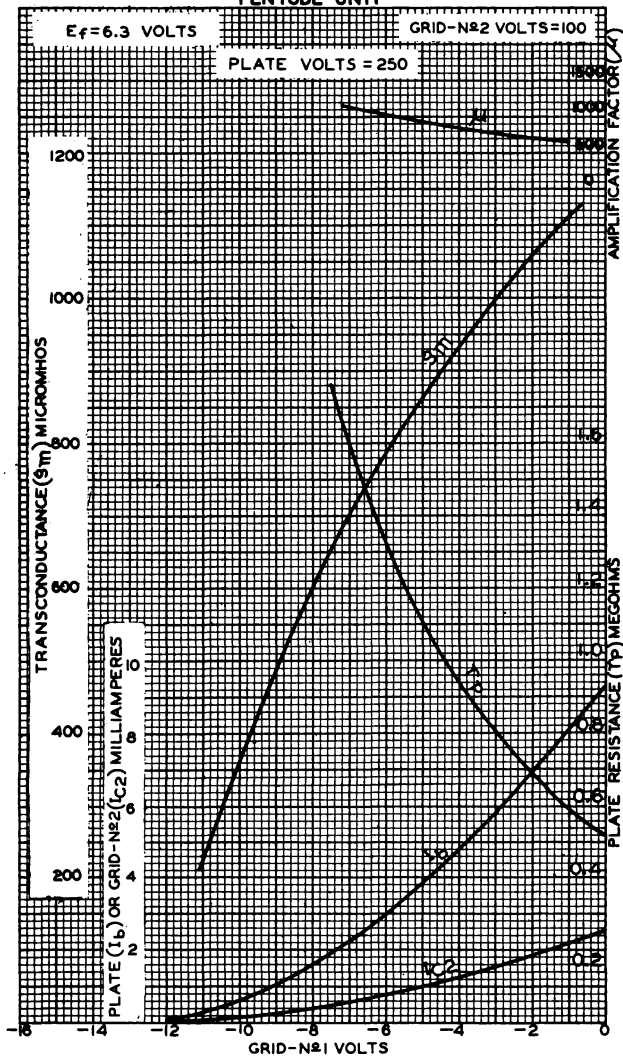
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4880

6B7



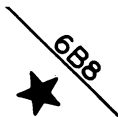
AVERAGE CHARACTERISTICS PENTODE UNIT



FEB. 25, 1937

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4745



DUPLEX-DIODE PENTODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:	0	
<i>Pentode Unit:</i>		
Grid to Plate	0.005 max.	μf
Input	6	μf
Output	9	μf
Maximum Overall Length		3-1/8"
Maximum Seated Height		2-9/16"
Maximum Diameter		1-5/16"
Bulb		Metal Shell, MT-8
Cap		Miniature
Base		Small Wafer Octal 8-Pin
Pin 1 - Shell		Pin 6 - Screen
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate		Pin 8 - Cathode
Pin 4 - Diode Plate #2		Cap - Grid
Pin 5 - Diode Plate #1		



Mounting Position

BOTTOM VIEW (8E)

Any

PENTODE UNIT

Plate Voltage	300 max.	volts
Screen Voltage	125 max.	volts
Screen Supply Voltage	300 max.	volts
Grid Voltage	0 min.	volts
Plate Dissipation	2.25 max.	watts
Screen Dissipation	0.3 max.	watt
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>		
Plate	250	volts
Screen	125	volts
Grid	-3	volts
Plate Res.	0.6 approx.	megohm
Transcond.	1325	μmhos
Grid Bias for		
cathode-current cut-off	-21 approx.	volts
Plate Cur.	10	ma.
Screen Cur.	2.3	ma.

DIODE UNITS - Two

Consideration of these units is given under Type 6B8-G. Circuits will be similar to those shown for Type 2B7.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- With shell connected to cathode.

For Diode Curves, see Type 6B7. For additional data, see RESISTANCE-COUPLED AMPLIFIER CHART.

← Indicates a change.

Sept. 2, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

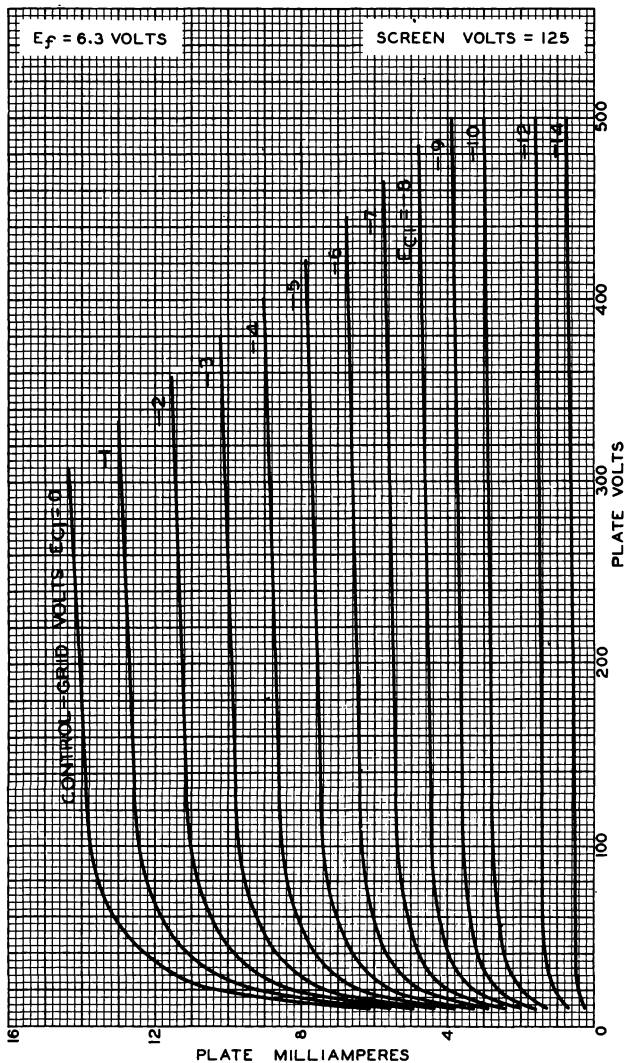
DATA

6B8



6B8

AVERAGE PLATE CHARACTERISTICS

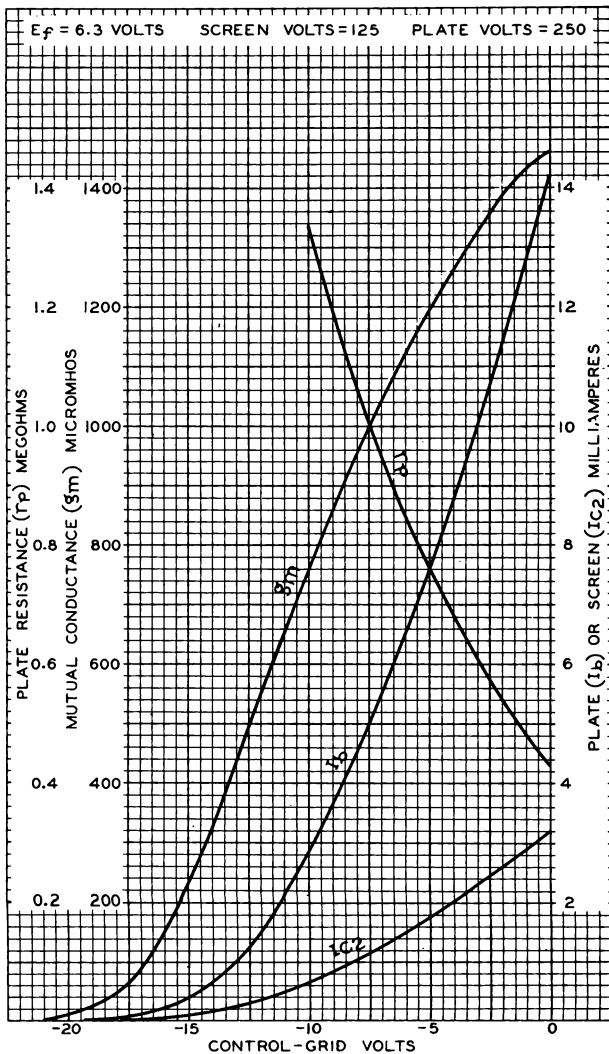


AUG. 14, 1936

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4657

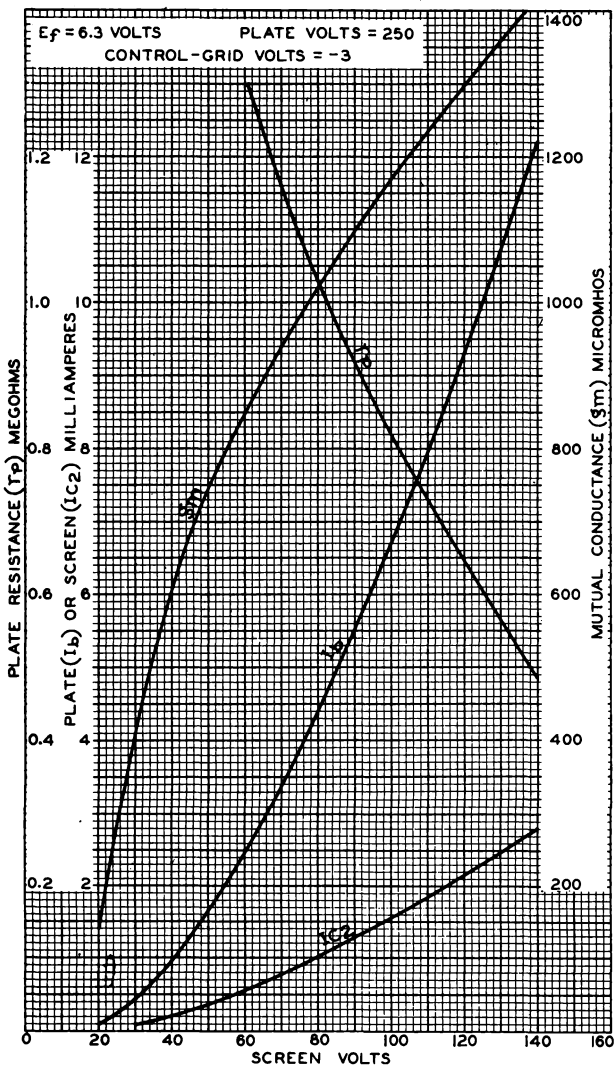
AVERAGE CHARACTERISTICS



6B8



AVERAGE CHARACTERISTICS



AUG. 18, 1936

RCA RADIORON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4661



6BA6

REMOTE-CUTOFF PENTODE

MINIATURE TYPE

6BA6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp.

Direct Interelectrode Capacitances:^oGrid No.1 to Plate . . . 0.0035 max. μ fInput. 5.5 μ fOutput 5.0 μ f

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-1/8"

Maximum Seated Length. 1-7/8"

Length from Base Seat to

Bulb Top (Excluding tip) 1-1/2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

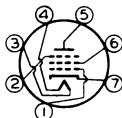
Basing Designation for BOTTOM VIEW 7BK1

Pin 1-Grid No.1

Pin 2-Grid No.3,

Internal Shield

Pin 3-Heater



Pin 4-Heater

Pin 5-Plate

Pin 6-Grid No.2

Pin 7-Cathode

CLASS A₁ AMPLIFIER

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE See Rating Curve at
front of this Section ←

GRID-No.2 SUPPLY VOLTAGE 300 max. volts

PLATE DISSIPATION. 3 max. watts

GRID-No.2 DISSIPATION. 0.6 max. watt

GRID-No.1 (CONTROL GRID) VOLTAGE:

Negative Bias Value. 50 max. volts

Positive Bias Value. 0 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

Plate Voltage. 100 250 . . . volts

Grid No.3 (Suppressor) . Connected to cathode at socket

Grid No.2 Voltage. 100 100 . . . volts

Cathode-Bias Resistor. 68 68 . . . ohms

^o With no external shield.

← Indicates a change

MAY 3, 1954

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BA6



6BA6

REMOTE-CUTOFF PENTODE

→ Plate Resistance (Approx.) . . .	0.25	1 . .	megohm
Transconductance	4300	4400 . . .	μmhos
Grid-No.1 Bias (Approx.) for transconductance of 40 μmhos .	-20	-20 . . .	volts
Plate Current.	10.8	11 . . .	ma.
Grid-No.2 Current.	4.4	4.2 . . .	ma.

→ indicates a change

MAY 3, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

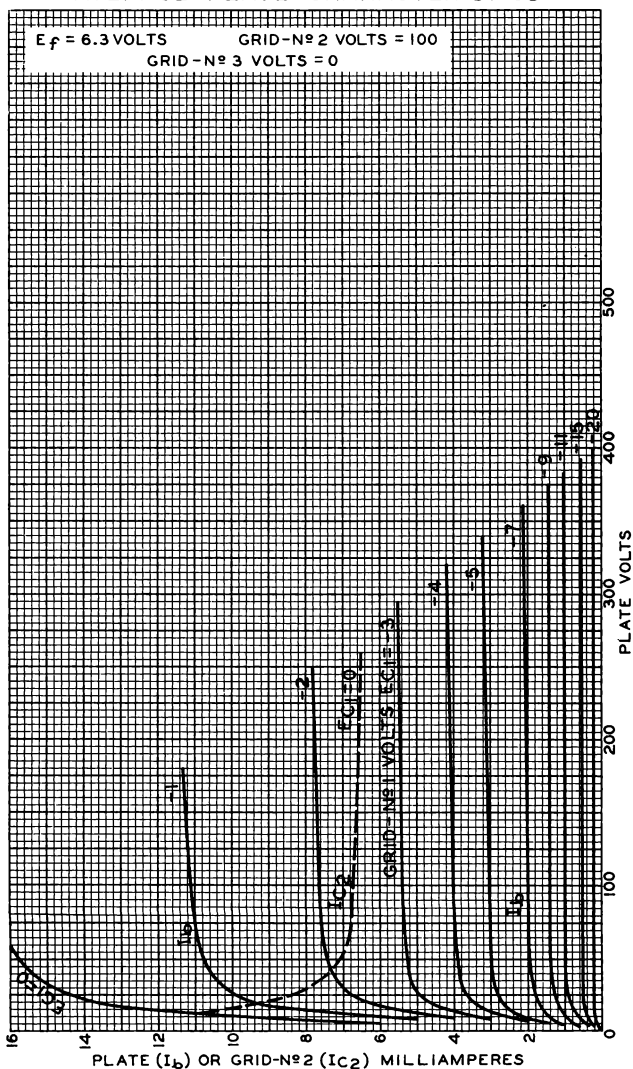
DATA



6BA6

6BA6

AVERAGE PLATE CHARACTERISTICS



OCT. 22, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

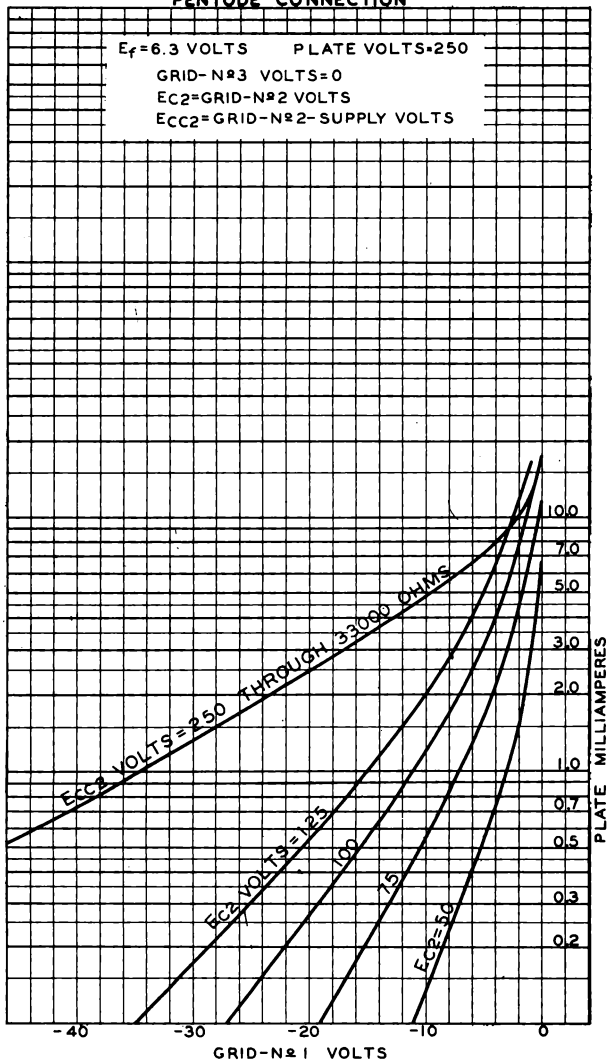
92CM-6609

6BA6



6BA6

AVERAGE CHARACTERISTICS PENTODE CONNECTION



NOV. 12, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

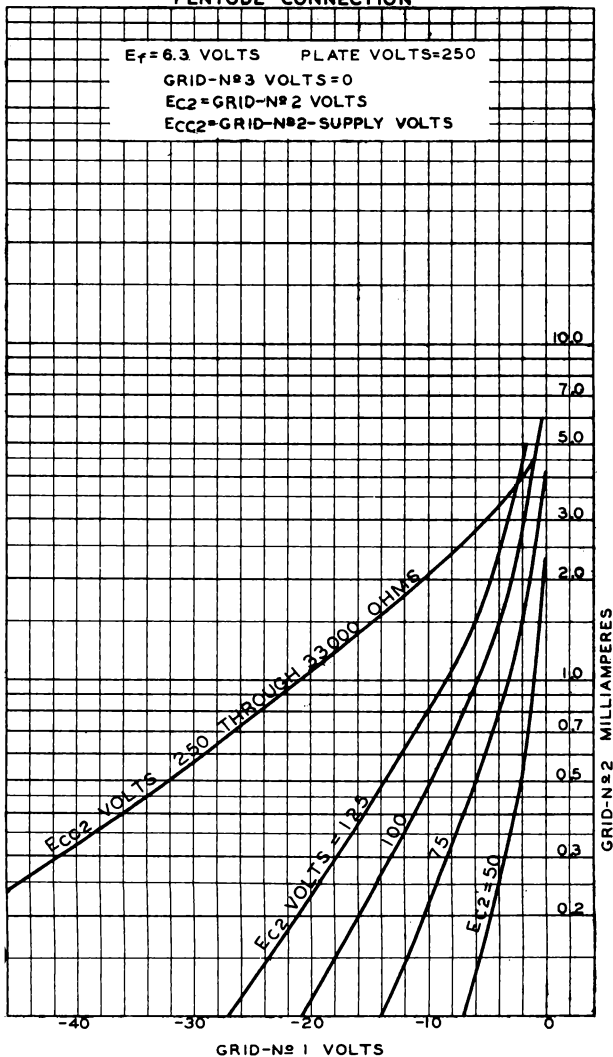
92CM-6622



6BA6

6BA6

AVERAGE CHARACTERISTICS
PENTODE CONNECTION



NOV. 12, 1945

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

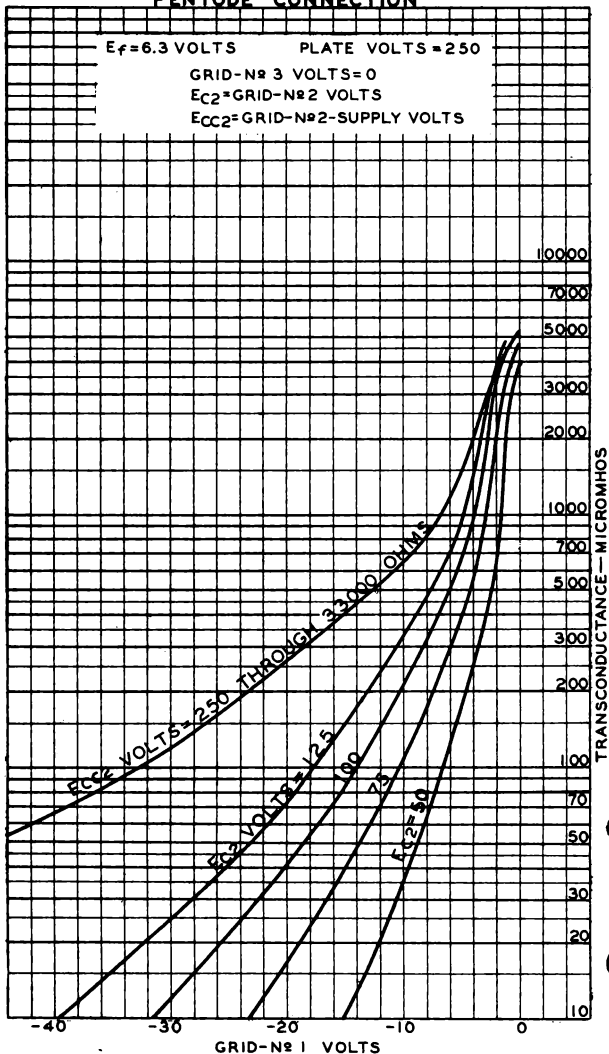
92CM-6620

6BA6



6BA6

AVERAGE CHARACTERISTICS PENTODE CONNECTION



DEC. 10, 1951

 TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6621R1

**6BA7****PENTAGRID CONVERTER**

9-PIN MINIATURE TYPE

6BA7GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances:^oGrid No.3 to All Other Electrodes
(RF Input) 9.5 μ fPlate to All Other Electrodes
(Mixer Output) 8.3 μ fGrid No.1 to All Other Electrodes
(Osc. Input) 6.7 μ fGrid No.3 to Plate 0.19 max. μ fGrid No.3 to Grid No.1 0.1 max. μ fGrid No.1 to Plate 0.05 max. μ fGrid No.1 to All Other Electrodes
Except Cathode 3.4 μ fGrid No.1 to Cathode 3.3 μ fCathode to All Other Electrodes
Except Grid No.1 4.0 μ f^o With no external shield.**Mechanical:**

Mounting Position. Any

Maximum Overall Length 2-5/8"

Maximum Seated Length. 2-3/8"

Length, Base Seat to Bulb Top (excluding tip). 2" $\pm$ 3/32"

Maximum Diameter 7/8"

Bulb T-6-1/2

Base Small-Button Noval 9-Pin

Basing Designation for BOTTOM VIEW 8CT

Pin 1-Grids No.2
& No.4

Pin 2-Grid No.1

Pin 3-Cathode

Pin 4-Heater

Pin 5-Heater

Pin 6-Grid No.5,
Internal
Shield

Pin 7-Grid No.3

Pin 8-Internal
Shield

Pin 9-Plate

CONVERTER SERVICE**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 300 max. volts

GRID-No.5 & INTERNAL-SHIELD VOLTAGE [▲] 0 max. volts

GRIDS-No.2 & No.4 VOLTAGE. 100 max. volts

GRIDS-No.2 & No.4 SUPPLY VOLTAGE 300 max. volts

PLATE DISSIPATION. 2.0 max. watts

GRIDS-No.2 & No.4 DISSIPATION. 1.5 max. watts

TOTAL CATHODE CURRENT. 22 max. ma

[▲] See next page.

SEPT. 30, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6BA7



6BA7 PENTAGRID CONVERTER

GRID-No.3 VOLTAGE:

Negative bias value.	100 max.	volts
Positive bias value.	0 max.	volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Characteristics - Separate Excitation:*

Plate Voltage.	100	250	volts
Grid-No.5 & Internal Shield. . .	Connected directly to ground		
Grids-No.2 & No.4 (Screen) Voltage . . .	100	100	volts
Grid-No.3 (Control Grid) Voltage	-1	-1	volt
Grid-No.1 (Oscillator Grid) Resistor . .	20000	20000	ohms
Plate Resistance (Approx.)	0.5	1	megohm
Conversion Transconductance	900	950	μ mhos
Conversion Transconductance (Approx.)# .	3.5	3.5	μ mhos
Plate Current.	3.6	3.8	ma
Grids-No.2 & No.4 Current.	10.2	10	ma
Grid-No.1 Current.	0.35	0.35	ma
Total Cathode Current.	14.2	14.2	ma

NOTE: The transconductance between grid No.1 and grids No.2 & No.4 connected to plate (not oscillating) is approximately 8000 micromhos under the following conditions: signal applied to grid No.1 at zero bias; grids-No.2 and No.4 and plate at 100 volts; grid No.3 grounded. Under the same conditions, the plate current is 32 milliamperes and the amplification factor is 16.5.

▲ Internal shield (Pins No.6 and No.8) connected directly to ground.

* The characteristics shown with separate excitation correspond very closely with those obtained in a self-excited oscillator circuit operating with zero bias.

With grid-No.3 bias of -20 volts.

SEPT. 30, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

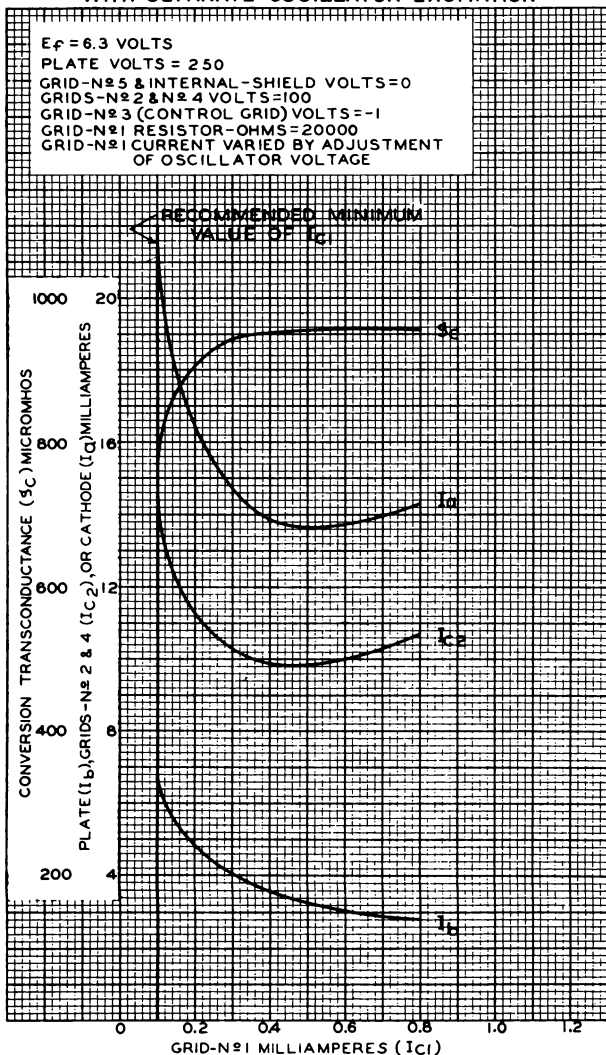
TENTATIVE DATA



6BA7

6BA7

OPERATION CHARACTERISTICS WITH SEPARATE OSCILLATOR EXCITATION



SEPT. 30, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

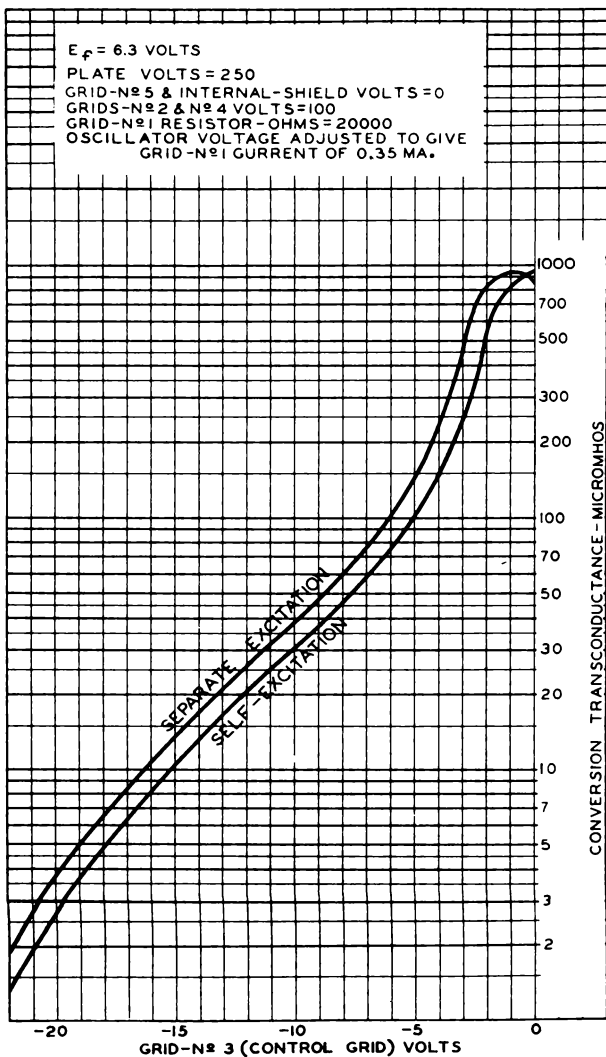
92CM-6980R2



6BA7

6BA7

OPERATION CHARACTERISTICS



AUGUST 27, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6982RI

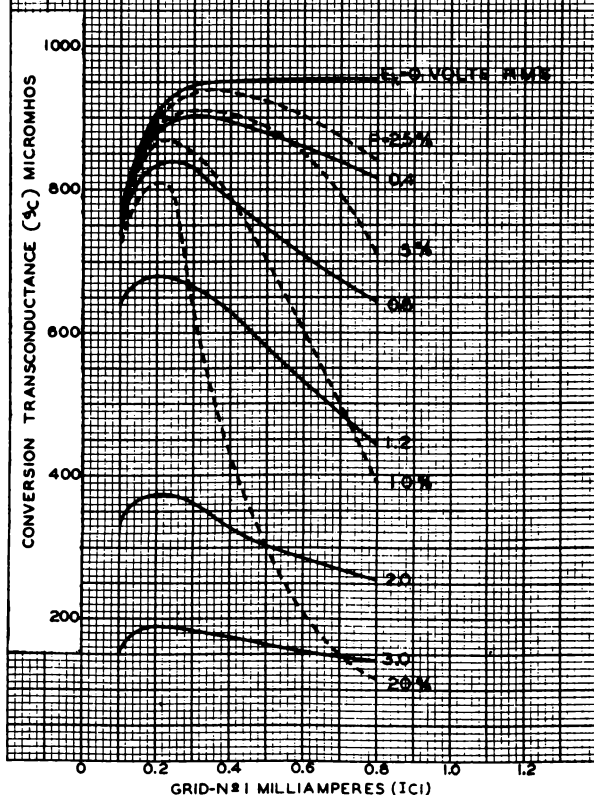
6BA7



6BA7

OPERATION CHARACTERISTICS WITH SELF-EXCITATION

$E_f = 6.3$ VOLTS
 PLATE VOLTS = 250
 GRID-Nº5 & INTERNAL-SHIELD VOLTS = 0
 GRIDS-Nº2 & Nº4 VOLTS = 100
 GRID-Nº3 (CONTROL GRID) VOLTS = -1
 GRID-Nº1 RESISTOR-OHMS = 20000
 P = PERCENTAGE RATIO OF E_k TO $E_k + E_g$, WHERE
 E_k = VOLTAGE ACROSS OSCILLATOR-COIL SECTION
 BETWEEN GROUND AND CATHODE AND
 E_g = OSCILLATOR VOLTAGE BETWEEN CATHODE
 AND GRID



AUGUST 25, 1948

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6981R1



6BC4

6BC4

MEDIUM-MU TRIODE

9-PIN MINIATURE TYPE

*For use as rf amplifier in cathode-drive circuits
of TV tuners covering range of 470-890 Mc*

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.225 amp

Direct Interelectrode Capacitances (Approx.):*

Grid to plate 1.6 μf Grid to heater and cathode 2.9 μf Plate to heater and cathode 0.26 μf Heater to cathode 2.7 μf **Characteristics - Class A₁ Amplifier:**

Plate Supply Voltage 150 volts

Cathode-Bias Resistor 100 ohms

Amplification Factor 48

Plate Resistance 4800 ohms

Transconductance 10000 μmhos Grid Voltage (Approx.) for plate
current of 10 μamp -10 volts

Plate Current 14.5 ma

Mechanical:

Mounting Position Any

Maximum Overall Length 1-3/4"

Maximum Seated Length 1-1/2"

Length, Base Seat to Bulb Top
(Excluding Tip) 1-1/8" $\pm$ 3/32"

Maximum Diameter 7/8"

Bulb T-6-1/2

Base Small-Button Noval 9-Pin (JETEC No. E9-1)

Basing Designation for BOTTOM VIEW 9DR

Pin 1 - Plate

Pin 2 - Grid

Pin 3 - Grid

Pin 4 - Heater

Pin 5 - Heater



Pin 6 - Cathode

Pin 7 - Grid

Pin 8 - Grid

Pin 9 - Plate

AMPLIFIER - Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE 250 max. volts

PLATE DISSIPATION 2.5 max. watts

CATHODE CURRENT 25 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 75 max. volts

Heater positive with respect to cathode 75 max. volts

* With no external shield.

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BC4



6BC4

MEDIUM-MU TRIODE

Maximum Circuit Values (For maximum rated conditions):

Grid-Circuit Resistance:

For cathode-bias operation	0.5 max. megohm
For fixed-bias operation	not recommended

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

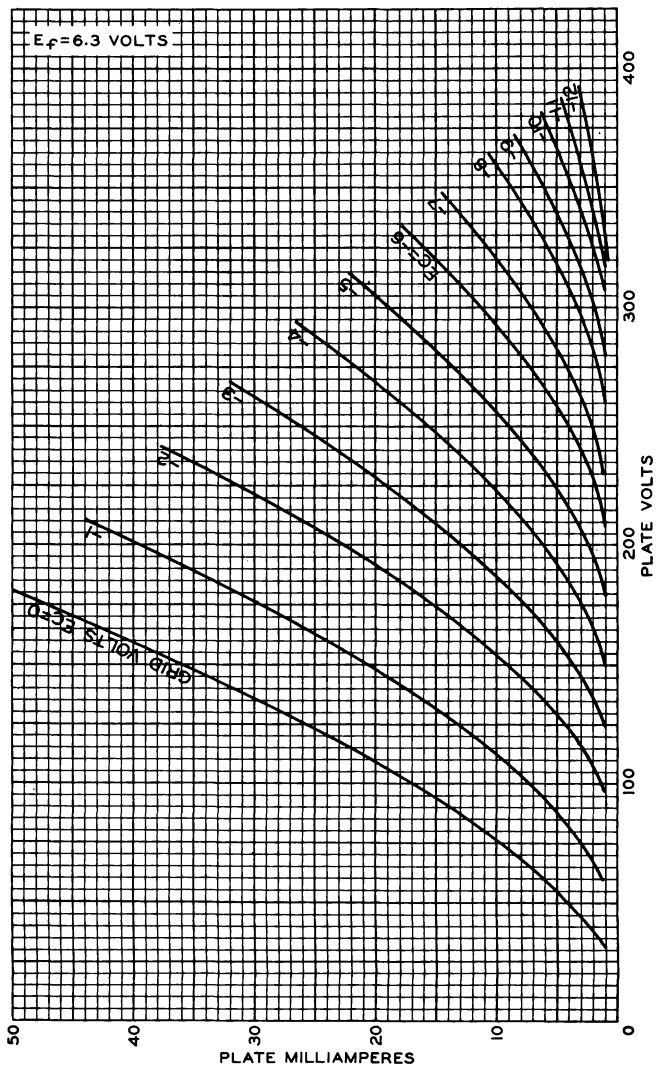
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6BC4

6BC4

AVERAGE PLATE CHARACTERISTICS



FEB. 12, 1954

TUBE DIVISION

92CM-8241

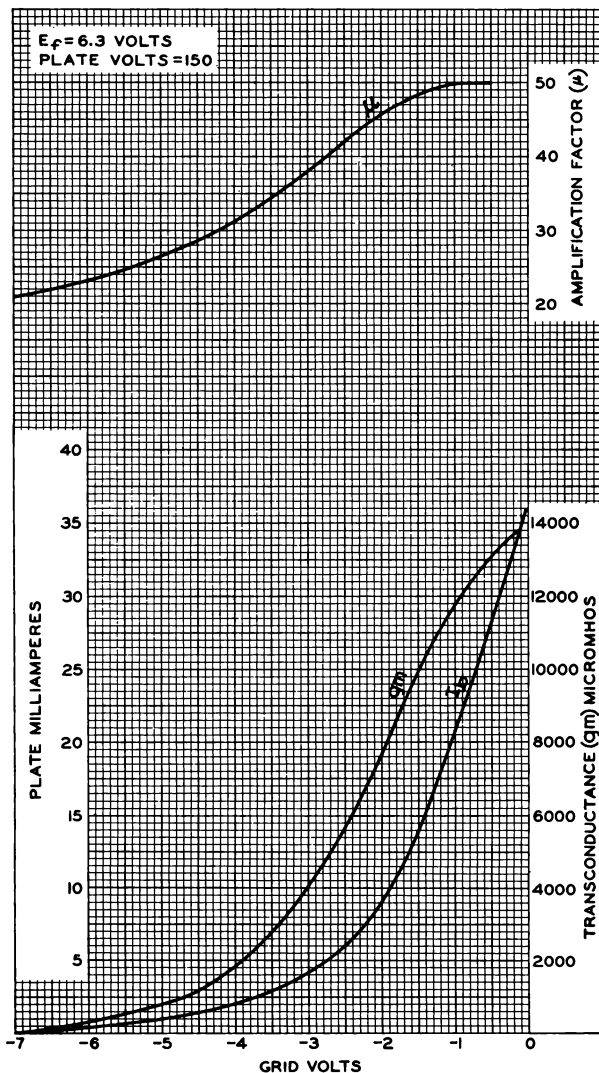
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BC4



6BC4

AVERAGE CHARACTERISTICS



FEB. 12, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8240



6BC5

6BC5

SHARP-CUTOFF PENTODE

MINIATURE TYPE

Useful at Frequencies up to 400 Mc

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:..

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ⁰	
Pentode Connection:			
Grid No.1 to plate . . .	0.030 max.	0.020 max.	μf
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater	6.5	6.6	μf
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater	1.8	2.6	μf
Triode Connection, Grid No.2 connected to plate:			
Grid No.1 to plate and grid No.2.	2.5	2.5	μf
Grid No.1 to cathode & grid No.3 & internal shield, and heater . .	3.9	4.0	μf
Plate and grid No.2 to cathode & grid No.3 & internal shield, and heater . .	3.0	4.3	μf

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-1/8"

Maximum Seated Length. 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip). . 1-1/2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

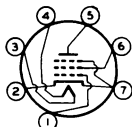
Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 7BD

Pin 1-Grid No.1

Pin 2-Cathode,
Grid No.3,
Internal
Shield

Pin 3-Heater



Pin 4-Heater

Pin 5-Plate

Pin 6-Grid No.2

Pin 7-Same as
Pin 2⁰ With external shield JETEC No.316 connected to cathode.

← Indicates a change.

MAR. 1, 1955

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BC5



6BC5

SHARP-CUTOFF PENTODE

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	300 max.	volts
→ GRID-No.2 VOLTAGE.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section	
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value.	0 max.	volts
PLATE DISSIPATION.	2 max.	watts
→ GRID-No.2 INPUT:		
For grid-No.2 voltages up to 150 volts	0.5 max.	watt
For grid-No.2 voltages between 150 and 300 volts.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section	

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage.	100	125	250	volts
Grid-No.2 Voltage.	100	125	150	volts
Cathode-Bias Resistor.	180	100	180	ohms
Plate Resistance (Approx.)	0.6	0.5	0.8	megohm
Transconductance	4900	6100	5700	μmhos
Grid-No.1 Voltage (Approx.)				
for plate current of 10 μamp	-5	-6	-8	volts
Plate Current.	4.7	8	7.5	ma
Grid-No.2 Current.	1.4	2.4	2.1	ma

AMPLIFIER - Class A₁

Triode Connection - Grid No.2 Connected to Plate

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value.	0 max.	volts
PLATE & GRID-No.2 DISSIPATION (TOTAL).	2.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage.	180	250	volts
Cathode-Bias Resistor.	330	820	ohms
Amplification Factor	42	40	
Plate Resistance (Approx.)	6000	9000	ohms
Transconductance	6000	4400	μmhos
Plate & Grid-No.2 Current (Total).	8	6	ma

→ Indicates a change.

MAR. 1, 1955

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6BC7

TRIPLE DIODE

9-PIN MINIATURE TYPE

6BC7

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts

Current 0.450 amp

Direct Interelectrode Capacitances (Approx.):^oPlate No.1 to Cathode No.1,
Heater, and Internal Shield 3.5 μ fPlate No.2 to Cathode No.2,
Heater, and Internal Shield 5.5 μ fPlate No.3 to Cathode No.3,
Heater, and Internal Shield 3.5 μ f^o With no external shield.

Mechanical:

Mounting Position Any

Maximum Overall Length 2-3/16"

Maximum Seated Length 1-15/16"

Length, Base Seat to Bulb Top (Excluding tip) . . . 1-9/16" $\pm$ 3/32"

Maximum Diameter 7/8"

Bulb T-6-1/2

Base Small Button Noval 9-Pin (JETEC No.E9-1)

Basing Designation for BOTTOM VIEW 9R

Pin 1 - Cathode of
Diode No.3Pin 2 - Plate of
Diode No.3Pin 3 - Internal
Shield

Pin 4 - Heater

Pin 5 - Heater

Pin 6 - Plate of
Diode No.2Pin 7 - Cathode of
Diode No.2Pin 8 - Plate of
Diode No.1Pin 9 - Cathode of
Diode No.1

EACH DIODE

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE 330 max. volts

PEAK PLATE CURRENT^o 54 max. ma

DC OUTPUT CURRENT 12 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . . . 200 max. volts

Heater positive with respect to cathode . . . 200 max. volts

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Av.	Max.	
Heater Current 1		0.410	0.450	0.490	amp
Plate Current (1) (Each Unit) 1,2		-	15	21	μ amp

^o In rectifier service, the minimum total effective plate-supply impedance per plate is 560 ohms.

MARCH 1, 1954

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6BC7

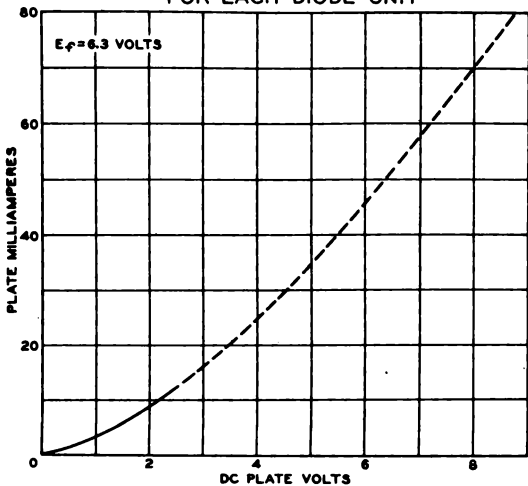


6BC7

TRIPLE DIODE

	Note	Min.	Avg.	Max.	
Plate Current (2) (Each Unit)	1,3	18	35	65	ma
Ratio of Plate Current of Unit No.3 to Plate Current of Unit No.1 .	1,3	0.77	1	1.3	

Note 1: With 6.3 volts ac or dc on heater.
 Note 2: With plate voltage of 0 volts, and plate load resistance of 40000 ohms. Each unit tested separately.
 Note 3: With plate voltage of 5 volts and no plate load resistance. Each unit tested separately.

AVERAGE PLATE CHARACTERISTIC
FOR EACH DIODE UNIT

92CS-8219

MARCH 1, 1954

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



6BC8

6BC8

MEDIUM-MU TWIN TRIODE**With Semiremote-Cutoff Characteristic**

9-PIN MINIATURE TYPE

*For use in cascode-type circuits of VHF TV tuners***GENERAL DATA****Electrical:**

Heater, for Unipotential Cathodes:

Voltage. 6.3 ac or dc volts

Current. 0.4 amp

Direct Interelectrode Capacitances:^o

	Unit No. 1	Unit No. 2	
Grid to plate.	1.4	1.4	μf
Grid to cathode, heater, and internal shield. . . .	2.5	2.5	μf
Plate to cathode, heater, and internal shield. . . .	1.3	1.3	μf
Heater to cathode [•]	2.3	2.3	μf
Grid of unit No. 1 to grid of unit No. 2	0.007 max.		μf
Plate of unit No. 1 to plate of unit No. 2	0.015 max.		μf

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage. 150 volts

Cathode Resistor 220 ohms

Amplification Factor 35

Transconductance 6200 μmhos

Plate Current. 10 ma

Grid Voltage (Approx.) for
transconductance of 50 μmhos -13 volts**Mechanical:**

Mounting Position. Any

Maximum Overall Length 2-3/16"

Maximum Seated Length. 1-15/16"

Length, Base Seat to Bulb Top (Excluding tip) . 1-9/16" $\pm$ 3/32"

Maximum Diameter 7/8"

Dimensional Outline. See General Section

Bulb T-6-1/2

Base Small-Button Noval 9-Pin (JETEC No. E9-1)

Basing Designation for BOTTOM VIEW 9AJ

Pin 1-Plate of
Unit No. 2Pin 2-Grid of
Unit No. 2Pin 3-Cathode of
Unit No. 2

Pin 4-Heater

Pin 5-Heater

Pin 6-Plate of
Unit No. 1Pin 7-Grid of
Unit No. 1Pin 8-Cathode of
Unit No. 1Pin 9-Internal
Shield^o with external shield JETEC No. 315 connected to cathode of unit under test, except as noted.[•] with external shield JETEC No. 315 connected to ground.

6BC8



6BC8

MEDIUM-MU TWIN TRIODE
With Semiremote-Cutoff Characteristic

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	250 max.	volts
CATHODE CURRENT.	20 max.	ma
PLATE DISSIPATION.	2 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode . .	200 max.	volts
Heater positive with respect to cathode . .	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For cathode-bias operation 0.5 max. megohm

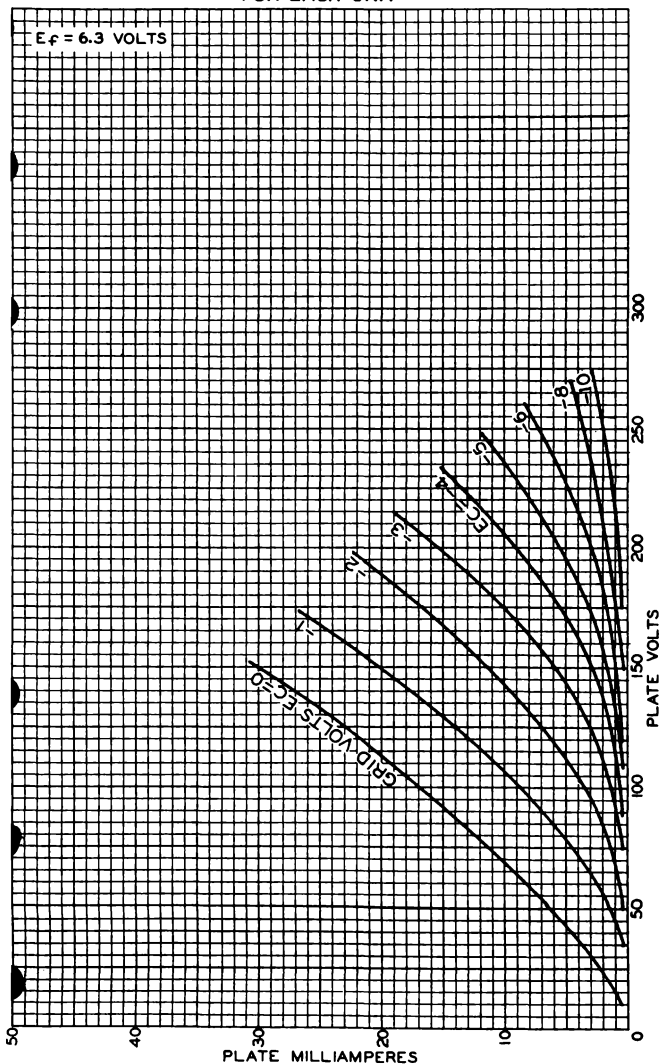
[▲] The dc component must not exceed 100 volts.



6BC8

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT

6BC8



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

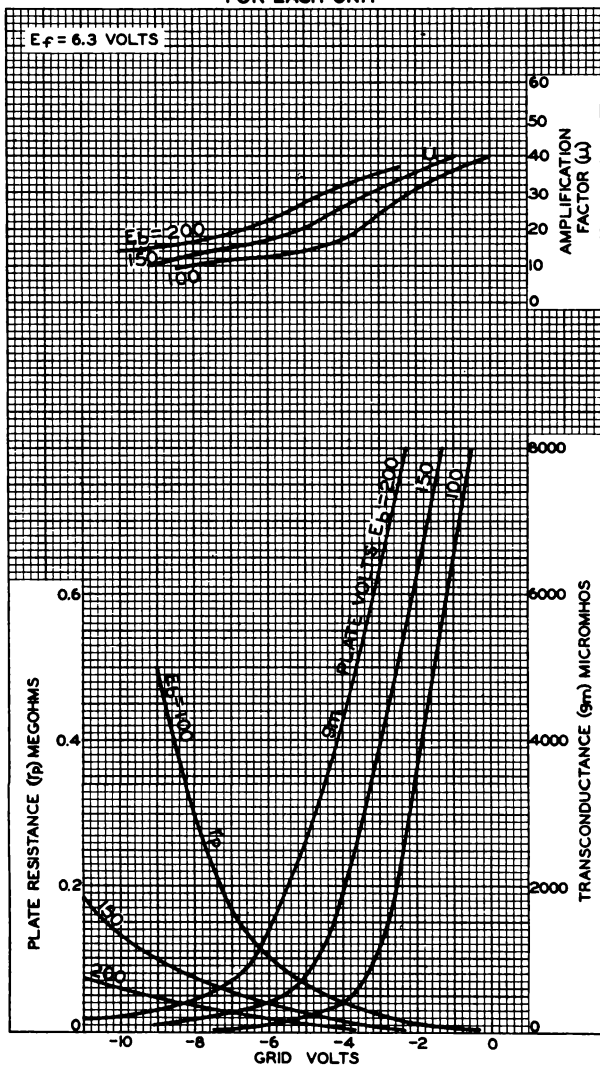
92CM-8789

6BC8



6BC8

AVERAGE CHARACTERISTICS FOR EACH UNIT



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

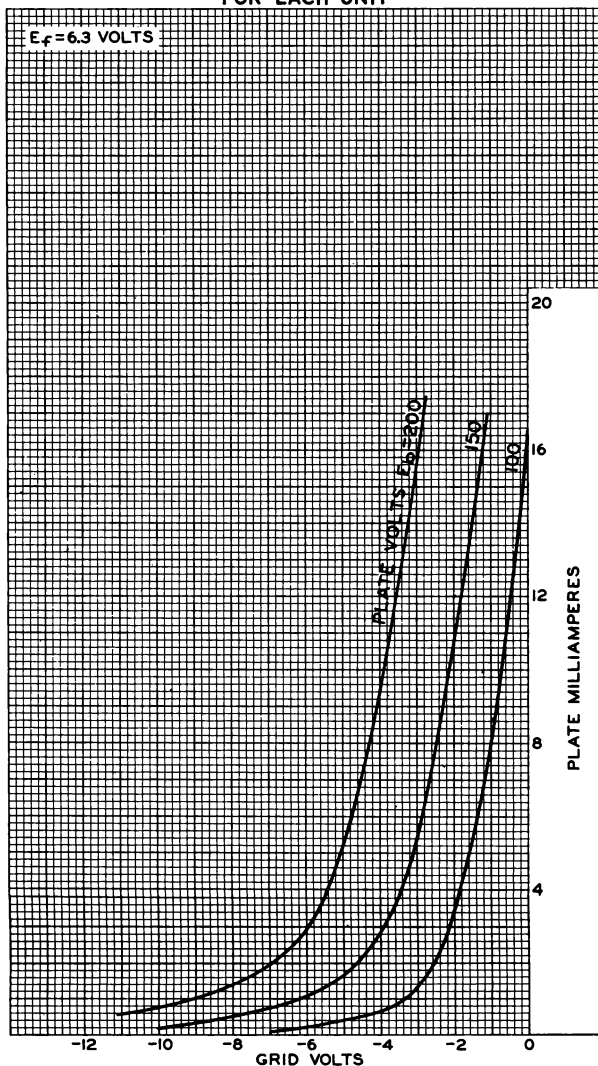
92CM-8790R1



6BC8

6BC8

AVERAGE CHARACTERISTICS FOR EACH UNIT





6BD4-A

SHARP-CUTOFF BEAM TRIODE

HIGH-VOLTAGE, LOW-CURRENT, REGULATOR TYPE

Supersedes Type 6BD₄

6BD4-A

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.6 amp

Direct Interelectrode Capacitances:

Grid to Plate 1.0 μf

Input 3.8 μf

Output 0.04 max. μf

Amplification Factor 1650

Mechanical:

Mounting Position Any

Maximum Overall Length 5-1/8"

Seated Length 4-1/2" $\pm$ 1/8"

Maximum Diameter 1-23/32"

Weight (Approx.). 2.7 oz

Bulb T-12

Cap Small (JETEC No. C1-1)

Base Short Jumbo-Shell Octal 6-Pin (JETEC No. B6-73)

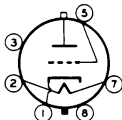
BOTTOM VIEW

Pin 1 - Cathode

Pin 2 - Heater

Pin 3 - No
Connection

Pin 5 - Grid



Pin 7 - Heater

Pin 8 - No
Connection

Cap - Plate

VOLTAGE-CONTROL SERVICE

Maximum Ratings, Design-Center Values:

DC PLATE VOLTAGE 27000 max. volts

UNREGULATED DC SUPPLY VOLTAGE 55000 max. volts

GRID VOLTAGE:

DC value -125 max. volts

Peak value -550 max. volts

DC PLATE CURRENT 1.5 max. ma

PLATE DISSIPATION 25 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 180 max. volts

Heater positive with respect to cathode 180 max. volts

Typical Operation As Shunt Voltage-Regulator Tube In Accompanying Circuit:

Unregulated Supply:

DC voltage 29800 36300 volts

Equivalent resistance 8 8 megohms

JUNE 14, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6BD4-A



6BD4-A

SHARP-CUTOFF BEAM TRIODE

Voltage Divider Values: *

R ₁ (5 watts)	120	220	megohms
R ₂ (2 watts)	1	1	megohm
R ₃ (1/2 watt)	2	3	megohms

Reference Voltage Supply:

DC value	500	500	volts
Equivalent resistance	1000	1000	ohms
Effective Grid-Plate Transconductance	138	116	μmhos

DC Plate Current:

For load current of 0 ma	1055	1035	μamp
For load current of 1 ma	100	100	μamp

Regulated DC Output Voltage:

For load current of 0 ma	20000	27000	volts
For load current of 1 ma	19700	26500	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

With unregulated supply having
an equivalent resistance of
at least 8 megohms 4 max. megohms

With unregulated supply having
an equivalent resistance less
than 8 megohms . . . See accompanying curve

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Heater Current	1	0.54	0.66	amp
Grid Voltage (1)	1,2	-7	-	volts
Grid Voltage (2)	1,3	-	-40	volts
Grid-Voltage Change	1,4	-	9	volts

Note 1: With heater voltage of 6.3 volts ac or dc.

Note 2: With dc plate voltage of 30000 volts and dc plate current of 1 ma.

Note 3: With dc plate voltage of 30000 volts and dc plate current of 0.1 ma.

Note 4: Difference between grid voltage (1) and grid voltage (2).

OPERATING NOTES

Operation of the 6BD4-A with a plate voltage above approximately 16000 volts (absolute value) results in the production of x-rays which can constitute a health hazard on prolonged exposure at close range unless the tube is adequately shielded. Relatively simple shielding should prove adequate, but the need for this precaution should be considered in equipment design.

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

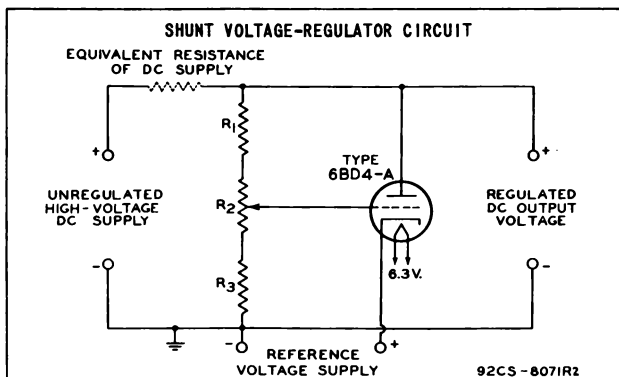
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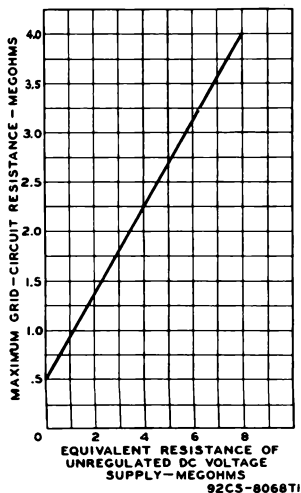
6BD4-A

6BD4-A

SHARP-CUTOFF BEAM TRIODE



Typical performance data for this basic circuit with certain characteristics of the unregulated dc supply and related voltage-divider values are given in the above tabulated data. Other combinations are feasible within the maximum ratings and the maximum circuit values for the 6BD4-A.



Devices and arrangements shown or described herein may use patents of RCA or others. Information contained herein is furnished without responsibility by RCA for its use and without prejudice to RCA's patent rights.

JUNE 14, 1954

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

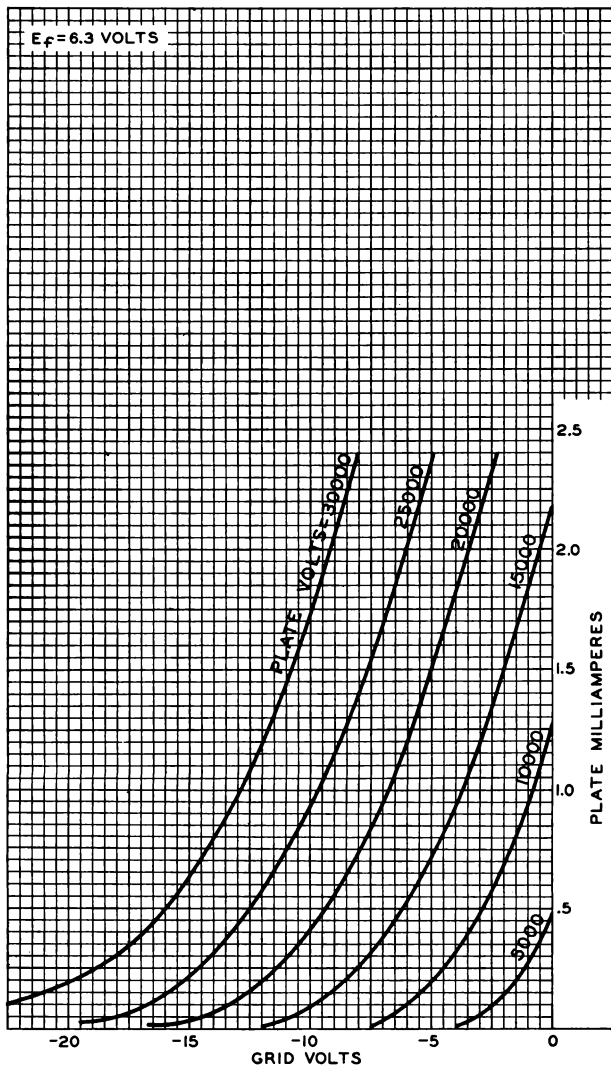
CE-8071R2
-8068T1

6BD4-A



6BD4-A

AVERAGE TRANSFER CHARACTERISTICS



MAR. 11, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8070R1



6BD6

6BD6

REMOTE-CUTOFF PENTODE

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances:

	Without Ex- ternal Shield	With External Shield No. 316	
Grid No.1 to Plate . . .	0.005 max.	0.004 max.	μf
Input.	4.3	4.3	μf
Output	5.0	5.0	μf

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-1/8"

Maximum Seated Length. 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip). 1-1/2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

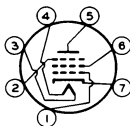
Base Small-Button Miniature 7-Pin

Basing Designation for BOTTOM VIEW 7BK1

Pin 1-Grid No.1

Pin 2-Grid No.3,
Internal Shield

Pin 3-Heater



Pin 4-Heater

Pin 5-Plate

Pin 6-Grid No.2

Pin 7-Cathode

AMPLIFIER-Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 125 max. volts

PLATE DISSIPATION. 3 max. watts

GRID-No.2 INPUT. 0.65 max. watt

TOTAL CATHODE CURRENT. 14 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

Typical Operation and Characteristics:

Plate Voltage. 100 125 250 volts

Grid No.3 (Suppressor) Connected to cathode at socket

Grid-No.2 Voltage. 100 125 100 volts

Grid-No.1 (Control Grid)

Voltage. -1 -3 -3 volts

Plate Resistance 0.15 0.18 0.8 megohm

Transconductance 2550 2350 2000 μmhos

FEB. 1, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6BD6



6BD6

REMOTE-CUTOFF PENTODE

Grid-No.1 Bias (Approx.) for transconductance of 10 μ mhos . .	-35	-45	-35	volts
Plate Current.	13	13	9	ma
Grid-No.2 Current.	5	5	3	ma

FEB 1, 1950

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6BE6

6BE6

PENTAGRID CONVERTER

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.3 amp

Direct Interelectrode

Capacitances:

Without
ShieldWith
Shield^oGrid No.3 to All Other
Electrodes (RF Input) 7 max. 7 max. μf Plate to All Other Elec-
trodes (Mixer Input) 8 13 μf Grid No.1 to All Other
Electrodes (Osc. Input) 5.5 max. 5.5 max. μf Grid No.3 to Plate 0.30 max. 0.25 max. μf Grid No.3 to Grid No.1 0.15 max. 0.15 max. μf Grid No.1 to Plate 0.1 max. 0.05 max. μf Grid No.1 to Cathode
and Grid No.5 3 3 μf Cathode and Grid No.5 to
All Other ElectrodesExcept Grid No.1 15 20 μf ^o JETEC No.316 connected to pin No.2.

Mechanical:

Mounting Position Any

Maximum Overall Length 2-1/8"

Maximum Seated Length 1-7/8"

Length from Base Seat to

Bulb Top (Excluding tip) 1-1/2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 7CH

Pin 1-Grid No.1

Pin 2-Cathode,
Grid No.5

Pin 3-Heater

Pin 4-Heater



Pin 5-Plate

Pin 6-Grid No.2,
Grid No.4

Pin 7-Grid No.3

CONVERTER

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

GRID-No.3 (CONTROL-GRID) VOLTAGE:

Negative Bias Value 50 max. volts

Positive Bias Value 0 max. volts

GRIDS-No.2 & No.4 (SCREEN) VOLTAGE 100 max. volts

GRIDS-No.2 & No.4 SUPPLY VOLTAGE 300 max. volts

←Indicates a change

MAY 3, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6BE6



6BE6

PENTAGRID CONVERTER

TOTAL CATHODE CURRENT	14 max.	ma
PLATE DISSIPATION	1 max.	watt
GRIDS-No.2 & No.4 INPUT	1 max.	watt
PEAK HEATER - CATHODE VOLTAGE:		
Heater negative with respect to cathode . .	90 max.	volts
Heater positive with respect to cathode . .	90 max.	volts

→ **Characteristics - Separate Excitation: ***

Plate Voltage	100	250	volts
Grids-No.2 & No.4 Voltage	100	100	volts
Grid-No.3 Voltage	-1.5	-1.5	volts
Grid-No.1 (Oscillator Grid)			
Voltage (rms)	10	10	volts
Grid-No.1 Resistor	20000	20000	ohms
Plate Resistance (Approx.)	0.4	1	megohm
Conversion Transconductance	455	475	μmhos
Grid-No.3 Voltage (Approx.) for conversion transconductance of:			
10 μmhos	-30	-30	volts
100 μmhos	-6	-6	volts
Plate Current	2.6	2.9	ma
Grids-No.2 & No.4 Current	7	6.8	ma
Grid-No.1 Current	0.5	0.5	ma
Total Cathode Current	10.1	10.2	ma

NOTE: With grids-No.2 & No.4 and plate at 100 volts, grids-No.1 & No.3 at zero volts, and signal applied to grid No.1, the oscillator transconductance (not oscillating) is 7250 micromhos; the cathode current is 25 milliamperes; and the amplification factor is 20. Grid-No.1 voltage (approx.) for plate current of 10 microamperes is -11 volts.

* The characteristics shown with separate excitation correspond very closely with those obtained in a self-excited oscillator circuit operating with zero bias.

→ Indicates a change

MAY 3, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

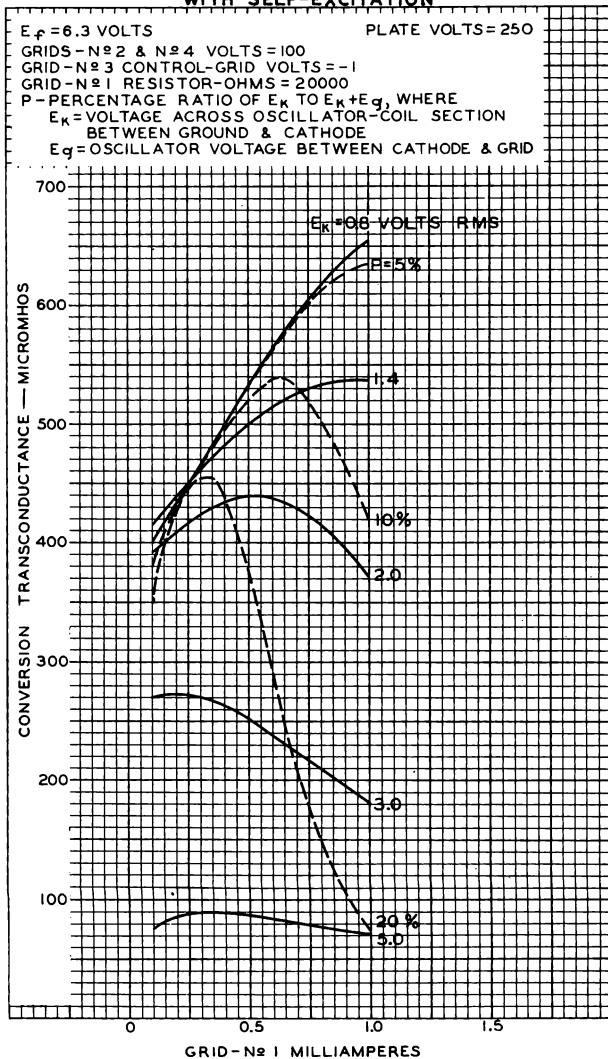
DATA



6BE6

6BE6

OPERATION CHARACTERISTICS WITH SELF-EXCITATION



NOV. 12, 1945

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

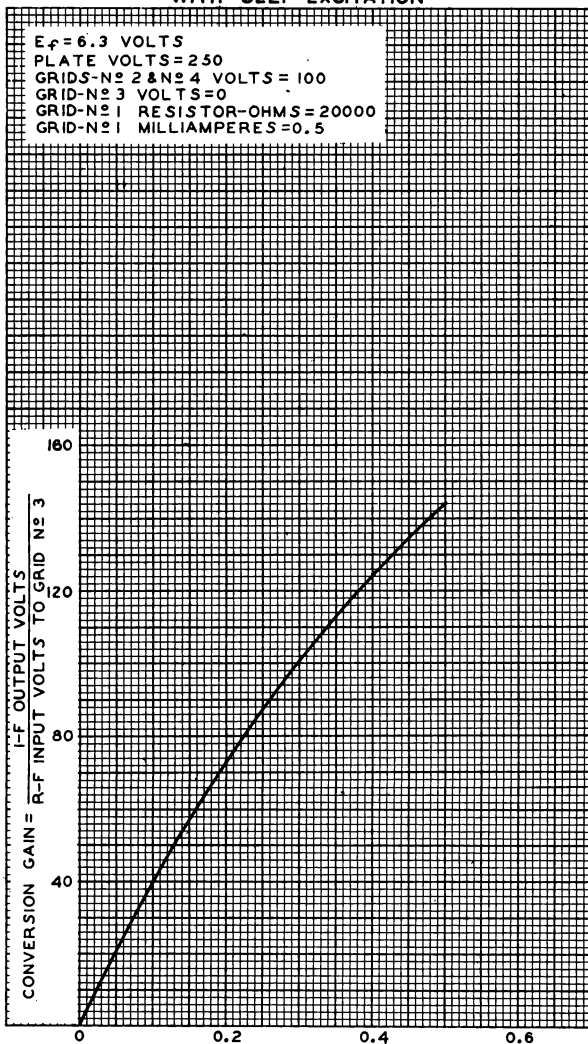
92CM-6625

6BE6



6BE6

OPERATION CHARACTERISTIC WITH SELF-EXCITATION



OCT.16, 1945

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

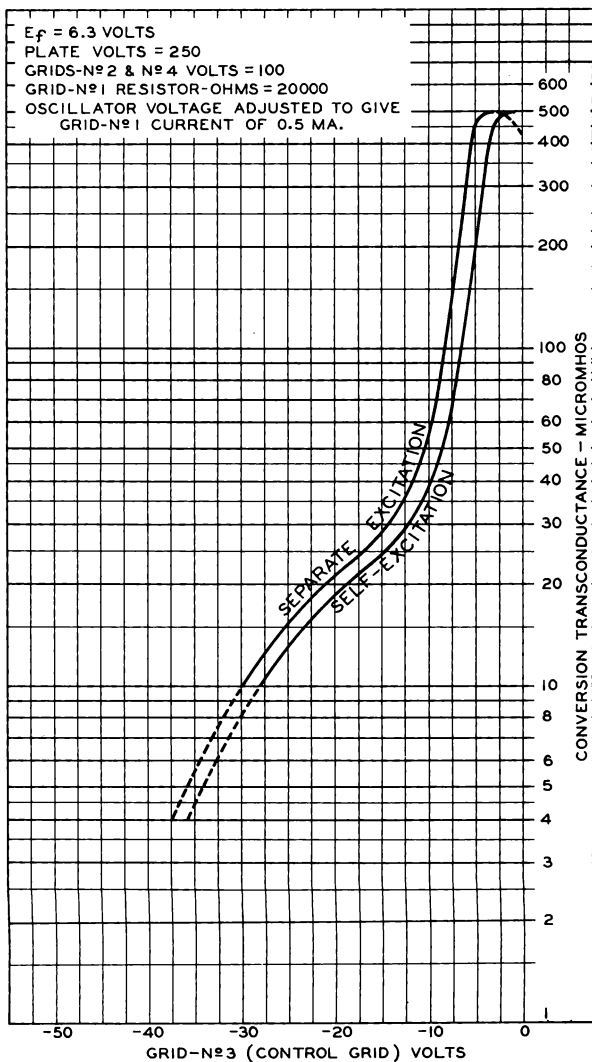
92CM - 6605



6BE6

6BE6

OPERATION CHARACTERISTICS



SEPT. 26, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

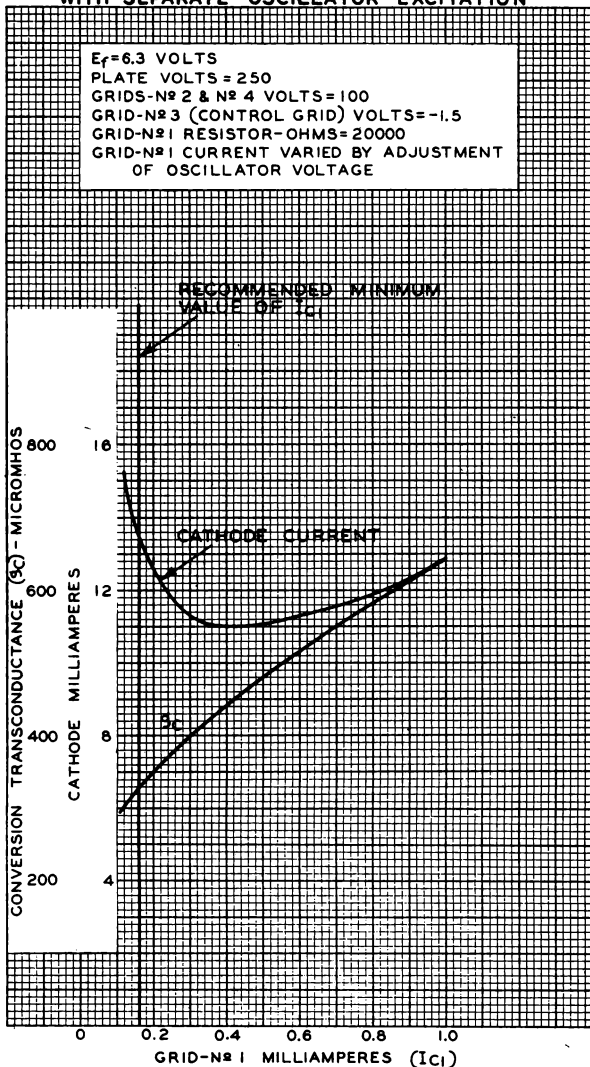
92CM-6601

6BE6



6BE6

OPERATION CHARACTERISTICS WITH SEPARATE OSCILLATOR EXCITATION



NOV. 12, 1945

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6624



6BF5

BEAM POWER AMPLIFIER

MINIATURE TYPE

6BF5

GENERAL DATA

Electrical:

Heater for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 1.2 amp

Direct Interelectrode Cap. (Approx.; no external shield):

As Beam Power Amplifier:

Grid No.1 to Plate . . 0.65 $\mu\mu\text{f}$

Input 14 $\mu\mu\text{f}$

Output 6 $\mu\mu\text{f}$

Characteristics as Beam Power Amplifier:

See AMPLIFIER--Class A₁

Characteristics as Triode-Connected Amplifier--Class A₁:

(Grid No.2 connected to plate)

Plate Voltage 225 volts

Grid Voltage -30 volts

Amplification Factor 6.7

Plate Resistance 2500 ohms

Transconductance 2700 μmhos

Plate Current 10 ma

Grid Voltage (Approx.) for plate
current of 0.5 ma -40 volts

Mechanical:

Mounting Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip) . . 2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

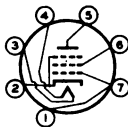
Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 7BZ

Pin 1-Grid No.1

Pin 2-Cathode,
Grid No.3

Pin 3-Heater



Pin 4-Heater

Pin 5-Plate

Pin 6-Grid No.2

Pin 7-Grid No.1

AMPLIFIER--Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 250 max. volts

GRID-No.2 (SCREEN) VOLTAGE 117 max. volts

PLATE DISSIPATION 5.5 max. watts

GRID-No.2 INPUT 1.25 max. watts

OCT. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6BF5**6BF5**

BEAM POWER AMPLIFIER

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200 ^{max}	volts

Typical Operation and Characteristics:

Plate Voltage	110	volts
Grid-No.2 (Screen) Voltage	110	volts
Grid-No.1 (Control-Grid) Voltage	-7.5	volts
Peak AF Grid-No.1 Voltage	7.5	volts
Zero-Signal Plate Current	36	ma
Maximum-Signal Plate Current	39	ma
Zero-Signal Grid-No.2 Current	4	ma
Maximum-Signal Grid-No.2 Current	10.5	ma
Plate Resistance (Approx.)	12000	ohms
Transconductance	7500	μmhos
Plate Load Resistance	2500	ohms
Total Harmonic Distortion	10	per cent
Maximum-Signal Power Output	1.9	watts

VERTICAL DEFLECTION AMPLIFIER

Triode Connected--Grid No.2 Connected to Plate

Maximum Ratings, Design-Center Values Except as Noted:

*For operation in a 525-line, 30 frame system**

DC PLATE VOLTAGE	250 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE†	900 ^o max.	volts
CATHODE CURRENT:		
DC	40 max.	ma
Peak	120 max.	ma
PLATE DISSIPATION††	5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200 ^{max}	volts

Maximum Circuit Values:

Grid-No.1 Circuit Resistance:	
For cathode-bias operation	2.2 max. megohms

- * The dc component must not exceed 100 volts.
- As described in "Standards of Good Engineering Practice for Television Broadcast Stations", Federal Communications Commission.
- † The duration of the voltage pulse must not exceed 7 per cent of one vertical scanning cycle, in a 525-line, 30-frame system, 7 per cent of one vertical scanning cycle is 1.2 milliseconds.
- ° Under no circumstances should this absolute value be exceeded.
- †† An adequate bias resistor or other means is required to protect the tube in the absence of excitation.

OCT. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



6BF6

6BF6

TWIN DIODE—MEDIUM-MU TRIODE

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances (Approx.):

	With External Shield [▲]	Without External Shield	
Triode Unit:			
Grid to Plate.	2.0	2.0	μf
Input.	1.8	1.8	μf
Output.	1.1	0.8	μf
Plate of Diode Unit			
No.1 to Cathode. . . .	1.4	0.7	μf
Plate of Diode Unit			
No.2 to Cathode. . . .	1.5	0.1	μf
Plate of Diode Unit			
No.1 to Triode Grid. .	0.06 max.	0.07 max.	μf
Plate of Diode Unit			
No.2 to Triode Grid. .	0.05 max.	0.06 max.	μf

Mechanical:

Mounting Position. Any

Maximum Overall Length. 2-1/8"

Maximum Seated Length. 1-7/8"

Length from Base Seat to

Bulb Top (excluding tip) 1-1/2" $\pm$ 3/32"

Maximum Diameter. 3/4"

Bulb T-5-1/2"

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

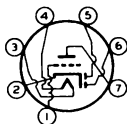
Basing Designation for BOTTOM VIEW. 7BT

Pin 1—Triode Grid

Pin 2—Cathode

Pin 3—Heater

Pin 4—Heater

Pin 5—Diode
Plate No.2Pin 6—Diode
Plate No.1

Pin 7—Triode Plate

TRIODE UNIT - Class A₁ Amplifier

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

PLATE DISSIPATION. 2.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . 90 max. volts

Heater positive with respect to cathode. . 90 max. volts

[▲] According to RTMA Standard ET-109A with External Shield No.315 tied to cathode.

← Indicates a change.

NOV. 1, 1952

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BF6



6BF6

TWIN DIODE—MEDIUM-MU TRIODE

Typical Operation with Transformer Coupling:

Plate Voltage.	250	volts
Grid Voltage	-9	volts
Amplification Factor	16	
Plate Resistance (Approx.)	8500	ohms
Transconductance	1900	μ mhos
Plate Current.	9.5	ma
Load Resistance.	10000	ohms
Total Harmonic Distortion.	6.5	%
Power Output	300	mw

Typical Operation as Resistance-Coupled Amplifier:

See *RESISTANCE-COUPLED AMPLIFIER CHART*
at front of this Section

DIODE UNITS

Maximum Ratings, Design-Center Values:

PLATE CURRENT (For each diode) 1.0 max. ma

Diode Considerations:

Consideration of these units, including typical circuits and diode curves, is given at the front of this section. Diode biasing of the triode unit of the 6BF6 is not suitable.

*Curves shown under Types 6R7 and 6SR7
also apply to the triode unit of the 6BF6*



6BG6-G

6BG6-G

BEAM POWER TUBE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.9 amp

Direct Interelectrode Capacitances (Approx.):^oGrid No.1 to plate 0.34 μ fGrid No.1 to cathode & grid No.3, 12 μ fgrid No.2, and heater. 6.5 μ fPlate to cathode & grid No.3, 6.5 μ fgrid No.2, and heater. 6.5 μ fCharacteristics, Class A₁ Amplifier:

Plate Voltage. 60 250 volts

Grid-No.2 (Screen) Voltage 250 250 volts

Grid-No.1 (Control-Grid) Voltage 0 -15 volts

Mu-Factor, Grid No.2 to Grid No.1. - 8

Plate Resistance (Approx.) - 25000 ohms

Transconductance - 6000 μ mhos

Plate Current. 180* 75 ma

Grid-No.2 Current. 18* 4 ma

Grid-No.1 Voltage (Approx.) for - -45 volts

plate current of 1 ma. - -45 volts

Mechanical:

Mounting Position. Vertical, base up or down, or

Horizontal with pins 2 and 7 in vertical plane

Maximum Overall Length 5-11/16"

Seated Length. 4-31/32" $\pm$ 5/32"

Maximum Diameter 2-1/16"

Dimensional Outline. See General Section

Bulb ST-16

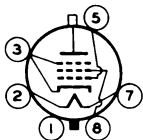
Cap. Small (JETEC No.C1-1)

Base Medium-Shell Octal 6-Pin (JETEC No.B6-13)

Basing Designation for BOTTOM VIEW. 5BT

Pin 1 - No Connec-
tion

Pin 2 - Heater

Pin 3 - Cathode,
Grid No.3

Pin 5 - Grid No.1

Pin 7 - Heater

Pin 8 - Grid No.2

Cap - Plate

^o without external shield.

* These values can be measured by a method involving a recurrent wave form such that the cathode current and grid-No.2 input will be kept within ratings in order to prevent damage to the tube.

← Indicates a change.

SEPT. 1, 1955

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BG6-G



6BG6-G

BEAM POWER TUBE

HORIZONTAL DEFLECTION AMPLIFIER

→ **Maximum Ratings, Design-Center Values Except as Noted:***For operation in a 525-line, 30-frame system[□]*

DC PLATE VOLTAGE	700	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum) [■]	6600 [■]	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500	max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	350	max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-50	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE	300	max.	volts
CATHODE CURRENT:			
Peak	400	max.	ma
Average	110	max.	ma
GRID-No.2 INPUT	3.2	max.	watts
PLATE DISSIPATION [†]	20	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200	max.	volts
Heater positive with respect to cathode	200 [▲]	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface).			
	210	max.	°C

→ **Maximum Circuit Values:**

Grid-No.1-Circuit Resistance:

For grid-resistor-bias operation[†] 0.47 max. megohm

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

[■] Under no circumstances should this absolute value be exceeded.

[●] The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

[†] It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.

[▲] The dc component must not exceed 100 volts.

→ Indicates a change.

SEPT. 1, 1955

TUBE DIVISION

DATA

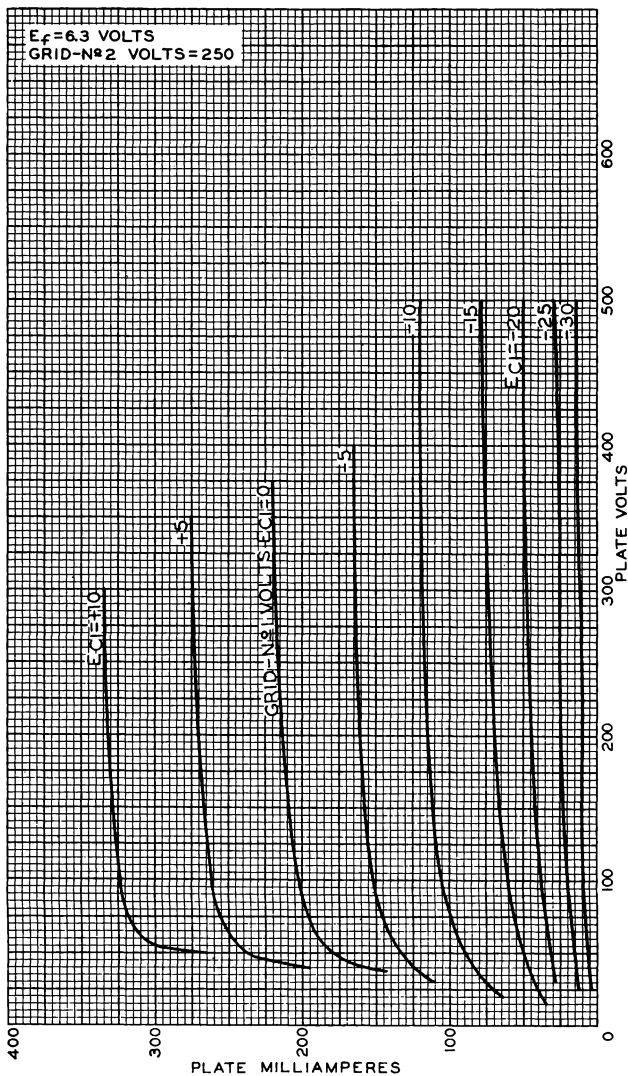
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6BG6-G

AVERAGE PLATE CHARACTERISTICS

6BG6-G



JUNE 18, 1947

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

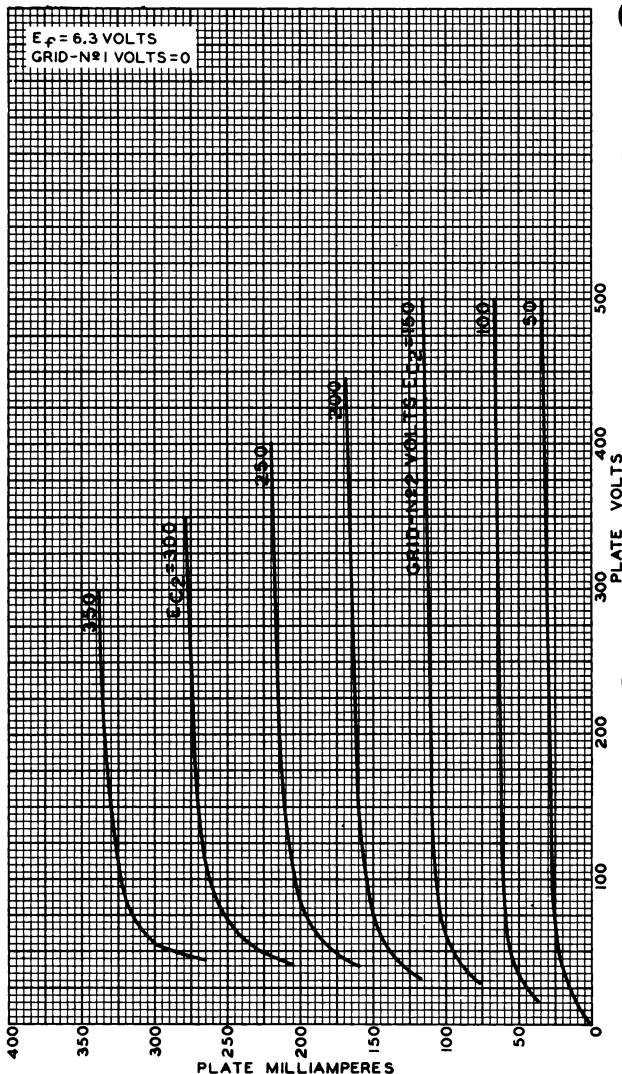
92CM-6774R1

6BG6-G



6BG6-G

AVERAGE PLATE CHARACTERISTICS



JUNE 25, 1947

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

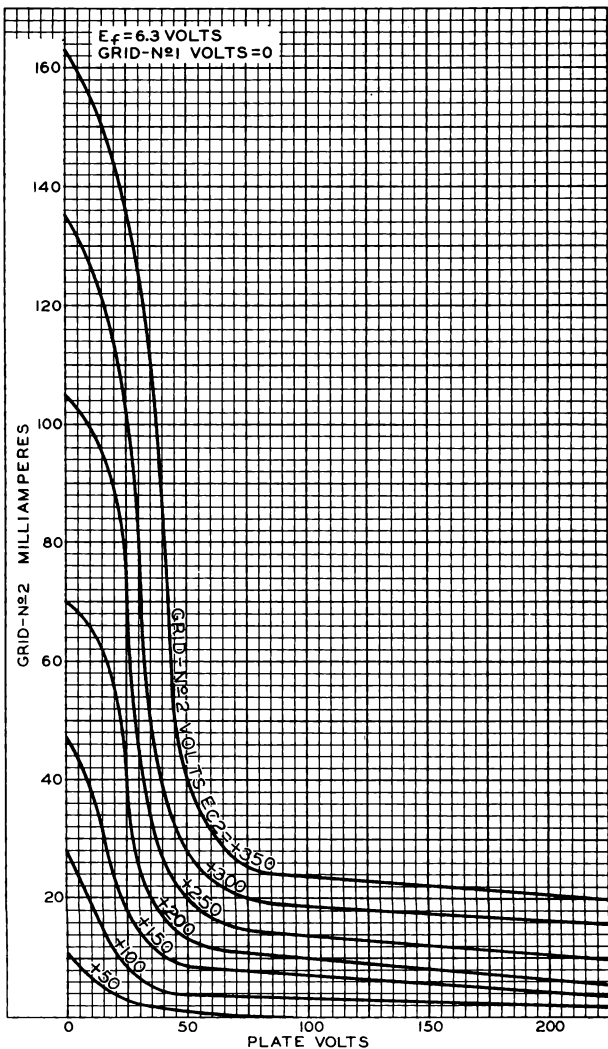
92CM-6775RI



6BG6-G

6BG6-G

AVERAGE CHARACTERISTICS



JUNE 23, 1947

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6776R1



6BH6

SHARP-CUTOFF PENTODE

7-PIN MINIATURE TYPE

6BH6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.15 amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ⁰	
Grid No.1 to plate	0.0035 max.	0.0035 max.	μf
Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater	5.4	5.4	μf
Plate to cathode, grid No.3 & internal shield, grid No.2, and heater	4.4	4.4	μf

Characteristics, Class A₁ Amplifier:

Plate Voltage.	100	250	volts
Grid No.3 (Suppressor)	Connected to cathode at socket		
Grid-No.2 Voltage.	100	150	volts
Grid-No.1 Voltage.	-1	-1	volt
Plate Resistance (Approx.)	0.7	1.4	megohm
Transconductance	3400	4600	μmhos
Plate Current.	3.6	7.4	ma
Grid-No.2 Current.	1.4	2.9	ma
Grid-No.1 Voltage (Approx.) for plate current of 10 μamp	-5	-7.7	volts

Mechanical:

Mounting Position.	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length.	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/2" $\pm$ 3-3/32"
Maximum Diameter	3/4"
Dimensional Outline.	See General Section
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW	7CM

Pin 1 - Grid No.1
Pin 2 - Cathode
Pin 3 - Heater
Pin 4 - Heater
Pin 5 - Plate



Pin 6 - Grid No.2
Pin 7 - Grid No.3,
Internal
Shield

⁰ with external shield JETEC No.316 connected to cathode.

← Indicates a change.

SEPT. 1, 1955

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BH6



6BH6

SHARP-CUTOFF PENTODE

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max. volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	300 max. volts
→ GRID-No.2 VOLTAGE.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section
GRID-No.1 (CONTROL-GRID) VOLTAGE:	
Negative bias value.	50 max. volts
Positive bias value.	0 max. volts
PLATE DISSIPATION.	3 max. watts
→ GRID-No.2 INPUT:	
For grid-No.2 voltages up to 150 volts . .	0.5 max. watt
For grid-No.2 voltages between 150 and 300 volts.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode. .	90 max. volts
Heater positive with respect to cathode. .	90 max. volts

→ Indicates a change.

SEPT. 1, 1955

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

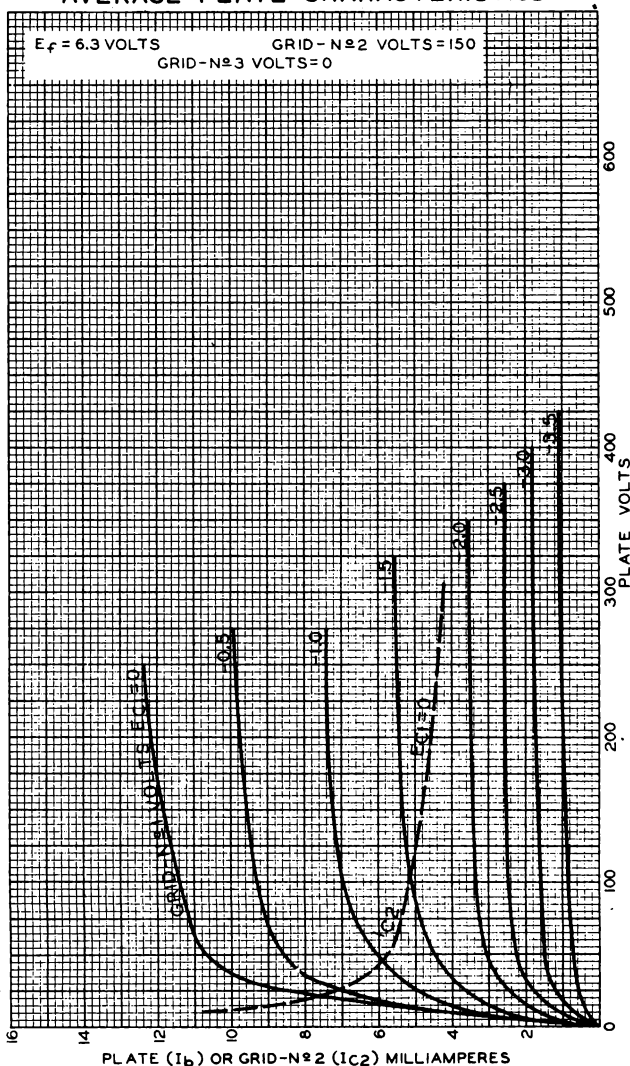
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6BH6

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AVERAGE PLATE CHARACTERISTICS



AUG. 23, 1947

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

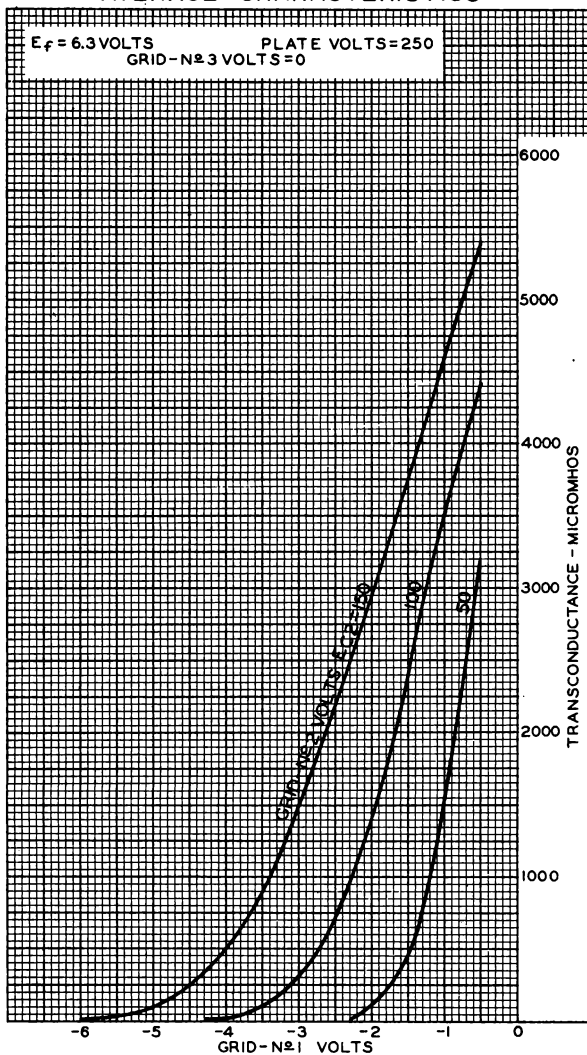
92CM-6892

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AVERAGE CHARACTERISTICS



AUG. 21. 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6891



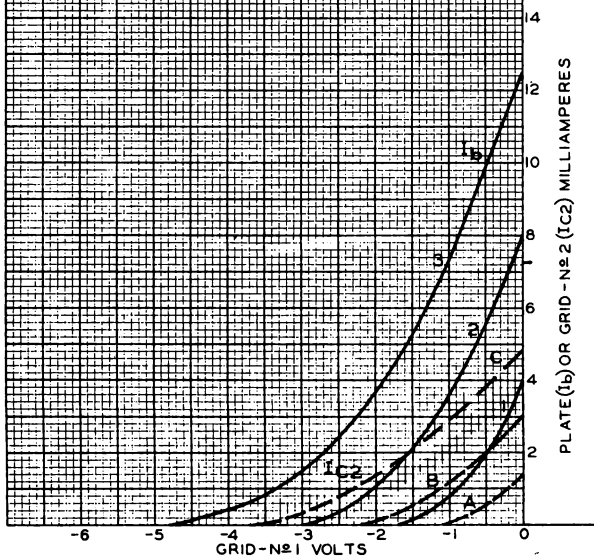
6BH6

6BH6

AVERAGE CHARACTERISTICS

 $E_f = 6.3$ VOLTS PLATE VOLTS = 250 GRID - N° 3 VOLTS = 0

CURVES		GRID - N° 2 VOLTS
I_b —	I_{c2} - -	
1	A	50
2	B	100
3	C	150



AUG. 22 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

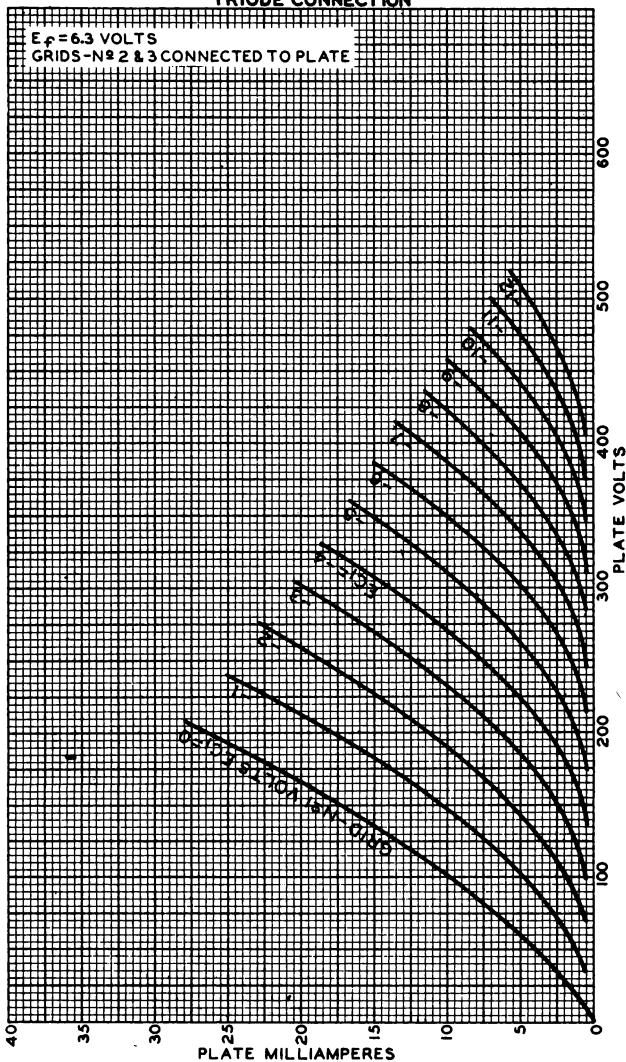
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6BH6

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



DEC. 10, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6896



6BH8

6BH8

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

Intended for use in equipment having
series heater-string arrangement

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	ac or dc volts
Current	0.6	amp
Warm-up time (Average).	11	sec

For definition of heater warm-up time and method of determining
it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of
this Section.

Direct Interelectrode Capacitances (Approx.):^o

Triode Unit:

Grid to plate	2.4	μ f
Grid to cathode and heater.	2.6	μ f
Plate to cathode and heater	0.38	μ f

Pentode Unit:

Grid No.1 to plate.	0.046	μ f
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater.	7	μ f
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater.	2.4	μ f
Triode grid to pentode plate.	0.016	μ f
Pentode grid No.1 to triode plate	0.004	μ f
Pentode plate to triode plate	0.095	μ f

Characteristics, Class A₁ Amplifier:

	Triode Unit	Pentode Unit	
Plate Voltage	150	200	volts
Grid-No.2 Voltage	—	125	volts
Grid-No.1 Voltage	—5	—	volts
Cathode Resistor.	—	82	ohms
Amplification Factor.	17	—	
Plate Resistance (Approx.).	5150	150000	ohms
Transconductance.	3300	7000	μ hos
Plate Current	9.5	15	ma
Grid-No.2 Current	—	3.4	ma
Grid-No.1 Voltage (Approx.) for plate current of 100 μ amp.	—14	—8	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length.	2-5/8"
Maximum Seated Length	2-3/8"

^o Without external shield.

6BH8

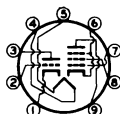


6BH8

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

Length, Base Seat to Bulb Top (Excluding tip). . . 2" $\pm$ 3/32"
 Maximum Diameter 7/8"
 Dimensional Outline. See General Section
 Bulb T-6-1/2
 Base Small-Button Noval 9-Pin (JETEC No.E9-1)
 Basing Designation for BOTTOM VIEW 9DX

Pin 1—Triode
Cathode
Pin 2—Triode
Grid
Pin 3—Triode
Plate
Pin 4—Heater
Pin 5—Heater



Pin 6—Pentode
Cathode,
Grid No.3,
Internal
Shield
Pin 7—Pentode
Grid No.1
Pin 8—Pentode
Grid No.2
Pin 9—Pentode
Plate

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

	Triode Unit	Pentode Unit	
PLATE VOLTAGE.	300 max.	300 max.	volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	-	300 max.	volts
GRID-No.2 VOLTAGE.	-	See Grid-No.2 Input	
Rating Chart at front of Receiving Tube Section			
GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Positive bias value	0 max.	0 max.	volts
PLATE DISSIPATION.	2.5 max.	3 max.	watts
GRID-No.2 INPUT:			
For grid-No.2 voltages up to 150 volts.	-	1 max.	watt
For grid-No.2 voltages between 150 and 300 volts.	-	See Grid-No.2 Input	
Rating Chart at front of Receiving Tube Section			
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200 max.	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	200 [▲] max.	volts

[▲] The dc component must not exceed 100 volts



6BH8

6BH8

MEDIUM-MU TRIODE — SHARP-CUTOFF PENTODE

Maximum Circuit Values:

	Triode Unit	Pentode Unit	
Grid-No.1-Circuit Resistance:			
For fixed-bias operation. .	0.5 max.	0.25 max.	megohm
For cathode-bias operation.	1.0 max.	1.0 max.	megohm

OPERATING CONSIDERATIONS

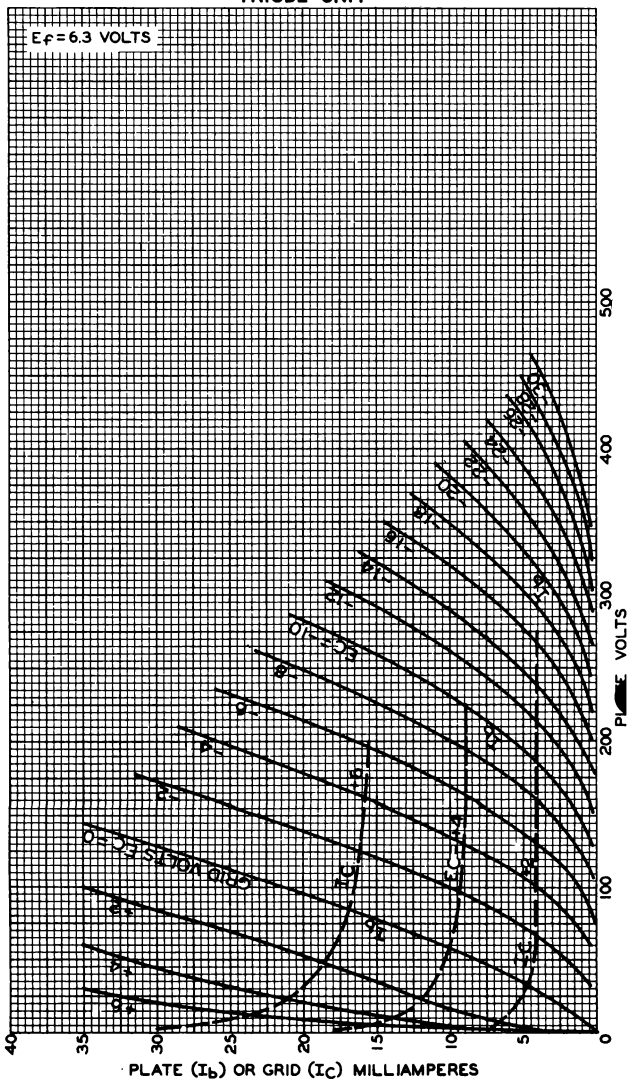
Because the *internal shield* is connected to the cathode and grid No.3, the impedance in the cathode circuit should be kept as low as possible to minimize cross-coupling effects.

6BH8



6BH8

AVERAGE CHARACTERISTICS TRIODE UNIT



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8799



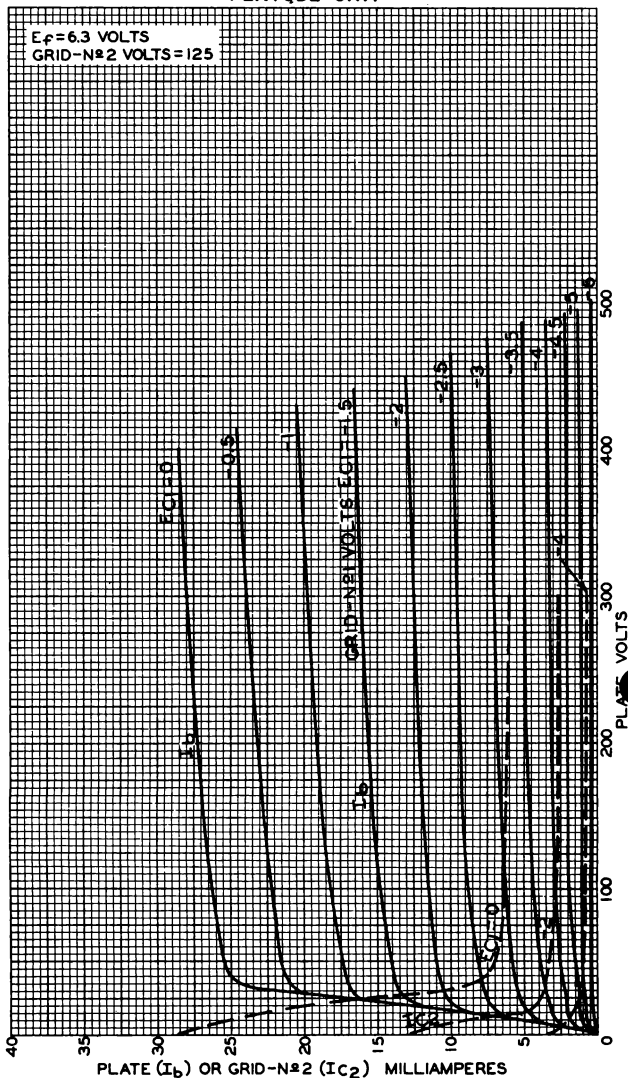
6BH8

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AVERAGE CHARACTERISTICS PENTODE UNIT

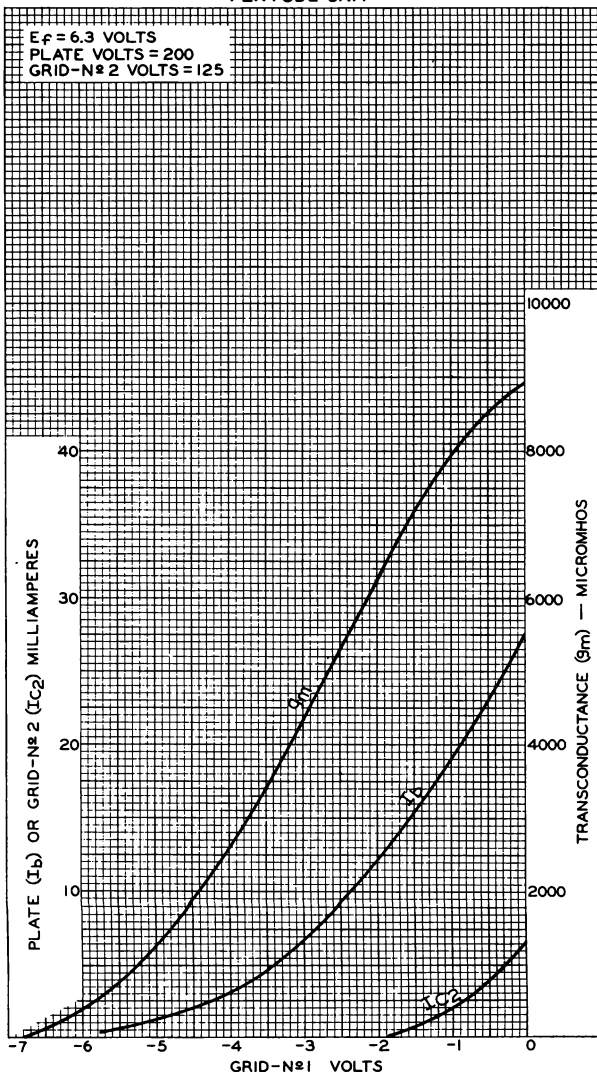




6BH8

AVERAGE CHARACTERISTICS
PENTODE UNIT

6BH8





6BJ6

REMOTE-CUTOFF PENTODE

7-PIN MINIATURE TYPE

6BJ6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.15 amp

Direct Interelectrode Capacitances:

	<i>Without External Shield</i>	<i>With External Shield^o</i>	
Grid No.1 to plate	0.0035 max.	0.0035 max.	μf
Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater	4.5	4.5	μf
Plate to cathode, grid No.3 & internal shield, grid No.2, and heater	5.5	5.5	μf

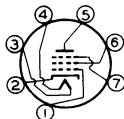
Characteristics, Class A₁ Amplifier:

Plate Voltage	100	250	volts
Grid No.3 (Suppressor)	<i>Connected to cathode at socket</i>		
Grid-No.2 Voltage	100	100	volts
Grid-No.1 Voltage	-1	-1	volt
Plate Resistance (Approx.) . .	0.25	1.3	megohm
Transconductance	3650	3600	μmhos
Plate Current	9	9.2	ma
Grid-No.2 Current	3.5	3.3	ma
Grid-No.1 Voltage (Approx.) for transconductance of 10 μmhos	-20	-20	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/2" $\pm$ 3/32"
Maximum Diameter	3/4"
Dimensional Outline	<i>See General Section</i>
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW	7CM

Pin 1 - Grid No.1
Pin 2 - Cathode
Pin 3 - Heater
Pin 4 - Heater
Pin 5 - Plate



Pin 6 - Grid No.2
Pin 7 - Grid No.3,
Internal
Shield

^o With external shield JETEC No.316 connected to cathode.

← Indicates a change.

SEPT. 1, 1955

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BJ6



6BJ6

REMOTE-CUTOFF PENTODE

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max. volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	300 max. volts
→ GRID-No.2 VOLTAGE.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section
GRID-No.1 (CONTROL-GRID) VOLTAGE:	
Negative bias value.	50 max. volts
Positive bias value.	0 max. volts
PLATE DISSIPATION.	3 max. watts
→ GRID-No.2 INPUT:	
For grid-No.2 voltages up to 150 volts . .	0.6 max. watt
For grid-No.2 voltages between 150 and 300 volts.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode. .	90 max. volts
Heater positive with respect to cathode. .	90 max. volts

→ Indicates a change.

SEPT. 1, 1955

TUBE DIVISION

DATA

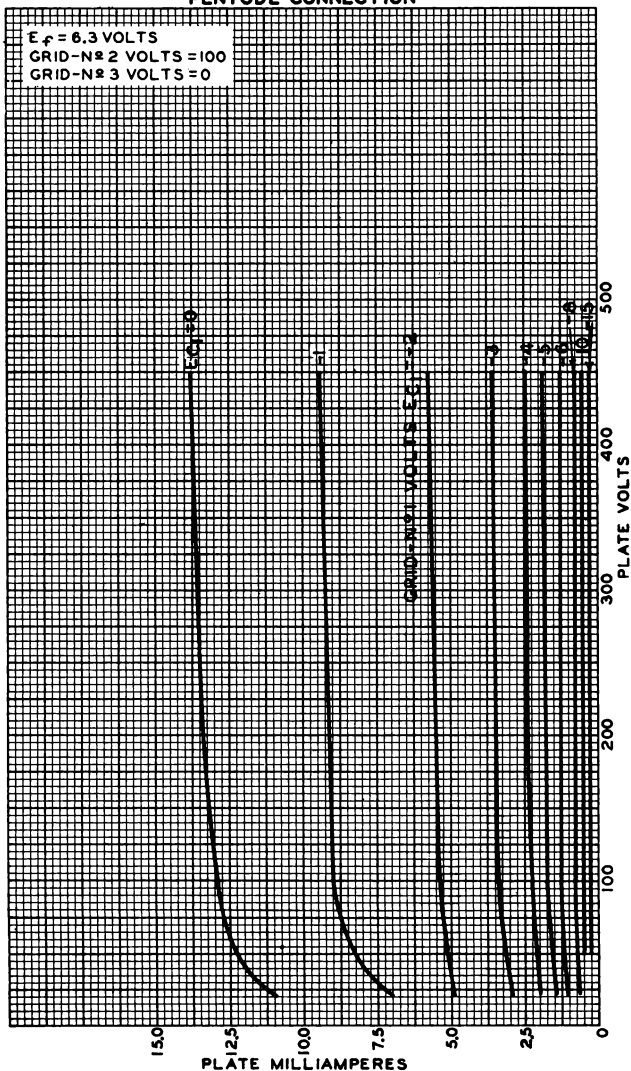
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6BJ6

6BJ6

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



MAY 29, 1947

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

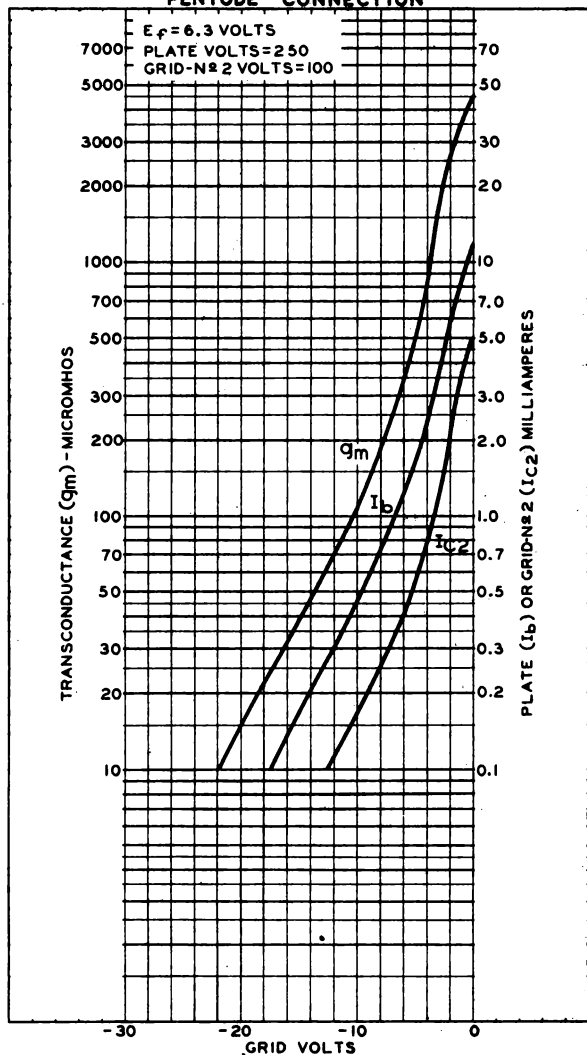
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6BJ6



6BJ6

AVERAGE CHARACTERISTICS PENTODE CONNECTION



JUNE 2, 1947

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 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

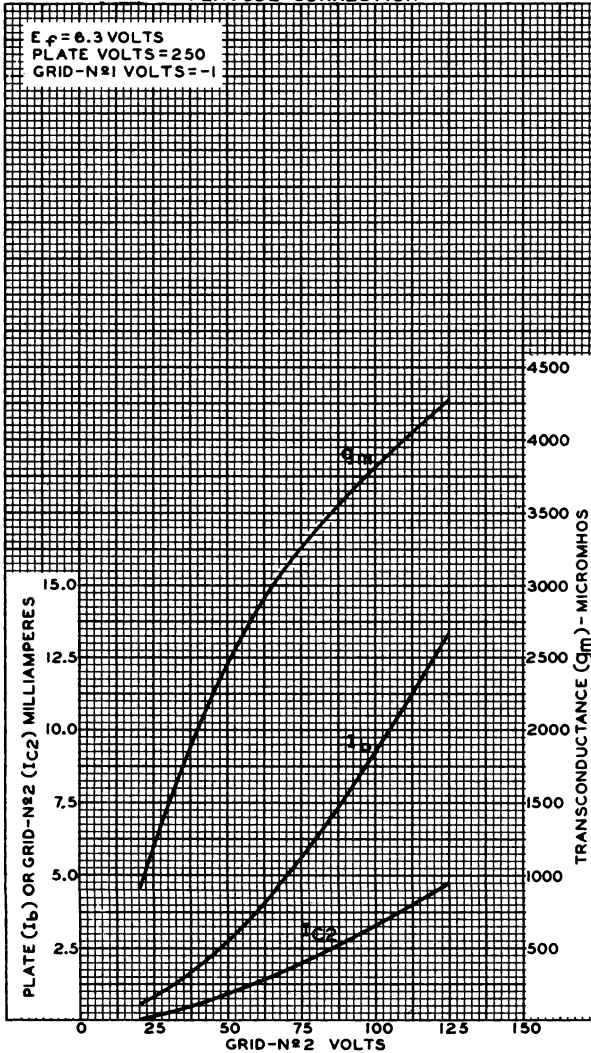
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6BJ6

6BJ6

AVERAGE CHARACTERISTICS PENTODE CONNECTION



JUNE 5, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6870



6BK4

6BK4

SHARP-CUTOFF BEAM TRIODE

HIGH-VOLTAGE, LOW-CURRENT, REGULATOR TYPE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.2 amp

Direct Interelectrode Capacitances:

Grid to plate. 0.03 $\mu\mu\text{f}$ Grid to cathode and heater. 2.6 $\mu\mu\text{f}$ Plate to cathode and heater. 1 $\mu\mu\text{f}$

Amplification Factor (Approx.) 2000

Mechanical:

Mounting Position. Any

Maximum Overall Length 5-7/32"

Seated Length. 4-1/2" $\pm$ 3/16"

Maximum Diameter 1-23/32"

Bulb T-12

Cap. Small (JETEC No. C1-1)

Base Short Jumbo-Shell Octal 8-Pin with

External Barriers (JETEC No. B8-71)

Basing Designation for Bottom View 8GC

Pin 1 - Cathode

Pin 2 - Heater

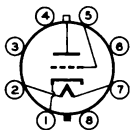
Pin 3 - Internal

Connection-

Do Not Use

Pin 4 - Same As

Pin 3



Pin 5 - Grid

Pin 6 - Same as

Pin 3

Pin 7 - Heater

Pin 8 - Same as

Pin 3

Cap - Plate

VOLTAGE-CONTROL SERVICE**Maximum Ratings, Design-Center Values:**

DC PLATE VOLTAGE 25000 max. volts

UNREGULATED DC SUPPLY VOLTAGE. 55000 max. volts

GRID VOLTAGE:

DC value -125 max. volts

Peak value[■]. -400 max. volts

DC PLATE CURRENT 1.5 max. ma

PLATE DISSIPATION. 25 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 225 max. volts

Heater positive with respect to cathode. Not Recommended

Typical Operation As Shunt Voltage-Regulator Tube**In Accompanying Circuit:**

Unregulated Supply:

DC voltage 36000 volts

Equivalent resistance. 11 megohms

[■] For interval of 20 seconds maximum duration during equipment warm-up period.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BK4



6BK4

SHARP-CUTOFF BEAM TRIODE

Voltage Divider Values:

R ₁ (5 watts)	220	megohms
R ₂ (2 watts)	1	megohm
R ₃ (1/2 watt)	820000	ohms

Reference Voltage Supply:

DC value	200	volts
Equivalent resistance	1000	ohms
Effective Grid-Plate Transconductance	200	μ mhos

DC Plate Current:

For load current of 0 ma	1000	μ amp
For load current of 1 ma	45	μ amp

Regulated DC Output Voltage:

For load current of 0 ma	25000	volts
For load current of 1 ma	24500	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For use with "Flyback Transformer" high-voltage supply	3 max.	megohms
---	--------	---------

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Grid Voltage (1)	1	-7	-	volts
Grid Voltage (2)	2	-	-40	volts
Grid-Voltage Change	3	-	9	volts

Note 1: With dc plate voltage of 30000 volts and dc plate current of 1 ma.

Note 2: With dc plate voltage of 30000 volts and dc plate current of 0.1 ma.

Note 3: Difference between grid voltage (1) and grid voltage (2).

OPERATING CONSIDERATIONS

Operation of the 6BK4 with a plate voltage above approximately 16000 volts (absolute value) results in the production of X-rays which can constitute a health hazard on prolonged exposure at close range unless the tube is adequately shielded. Relatively simple shielding should prove adequate, but the need for this precaution should be considered in equipment design.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

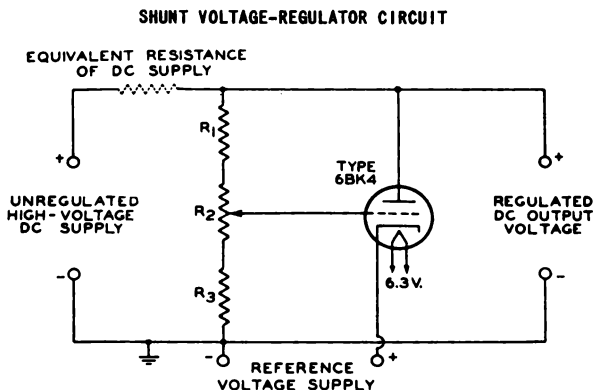
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6BK4

6BK4

SHARP-CUTOFF BEAM TRIODE



Typical performance data for this basic circuit with certain characteristics of the unregulated dc supply and related voltage-divider values are given in the above tabulated data. Other combinations are feasible within the maximum ratings and the maximum circuit values for the 6BK4.

Devices and arrangements shown or described herein may use patents of RCA or others. Information contained herein is furnished without responsibility by RCA for its use and without prejudice to RCA's patent rights.

MAR. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

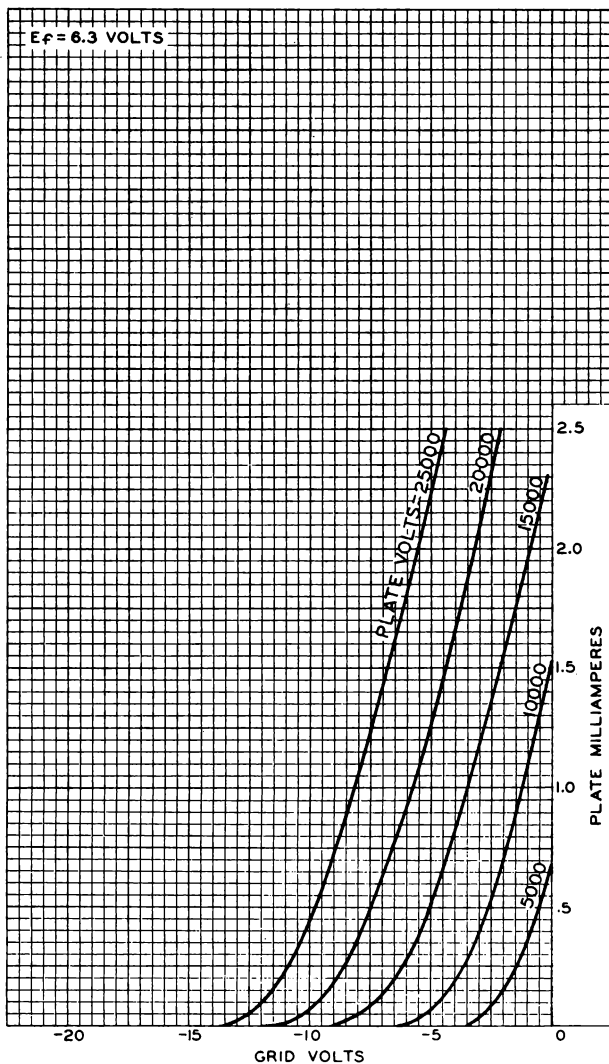
CE-8435

6BK4



6BK4

AVERAGE TRANSFER CHARACTERISTICS



OCT. 18, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8432R1



6BK5

BEAM POWER TUBE

9-PIN MINIATURE TYPE

6BK5

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 1.2 amp

Direct Interelectrode Capacitances:^o

Grid No.1 to plate 0.6 μf

Grid No.1 to cathode & grid No.3,
grid No.2, and heater. 13 μf

Plate to cathode & grid No.3,
grid No.2, and heater. 5 μf

Mechanical:

Mounting Position. Any

Maximum Overall Length. 2-5/8"

Maximum Seated Length. 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip). 2" $\pm$ 3/32"

Maximum Diameter. 7/8"

Bulb T-6-1/2

Base Small-Button Noval 9-Pin (JETEC No.E9-1)

Basing Designation for BOTTOM VIEW 9BQ

Pin 1 - Plate

Pin 2 - No Con-
nection

Pin 3 - Grid No.1

Pin 4 - Heater

Pin 5 - Heater



Pin 6 - Cathode,

Grid No.3

Pin 7 - Grid No.1

Pin 8 - Grid No.2

Pin 9 - No Con-
nection

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 250 max. volts

GRID-No.2 (SCREEN) VOLTAGE 250 max. volts

DC GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value. 0 max. volts

GRID-No.2 INPUT. 2.5 max. watts

PLATE DISSIPATION. 9 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 100 max. volts

Heater positive with respect to cathode. 100 max. volts

Typical Operation and Characteristics:

Plate Voltage. 250 volts

Grid-No.2 Voltage. 250 volts

Grid-No.1 Voltage. -5 volts

Peak AF Grid-No.1 Voltage. 5 volts

Zero-Signal Plate Current. 35 ma

Max.-Signal Plate Current (Approx.). 37 ma

Zero-Signal Grid-No.2 Current. 3.5 ma

^o without external shield.

MAY 1, 1955

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6BK5



6BK5

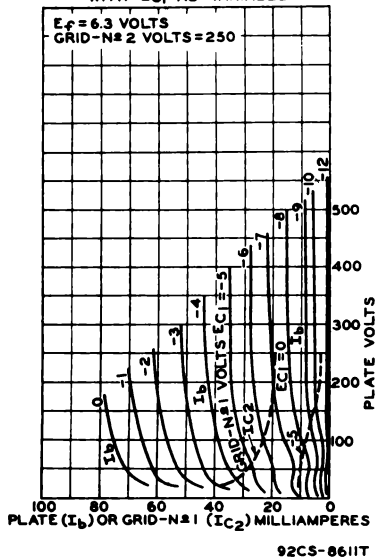
BEAM POWER TUBE

Max.-Signal Grid-No.2 Current (Approx.) . .	10	ma
Plate Resistance (Approx.)	0.1	megohm
Transconductance	8500	μ mhos
Load Resistance	6500	ohms
Total Harmonic Distortion (Approx.) . . .	7	%
Power Output	3.5	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max. megohm
For cathode-bias operation	0.5 max. megohm

AVERAGE PLATE CHARACTERISTICS
WITH E_{C1} AS VARIABLE

MAY 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6BL4

6BL4 HALF-WAVE VACUUM RECTIFIER

For Television Damper Service

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 3.0 amp

Direct Interelectrode Capacitances (Approx.):^oPlate to heater and cathode 11.5 μf Cathode to heater and plate 16 μf Heater to cathode 5 μf

Mechanical:

Mounting Position Any

Maximum Overall Length 4-5/8"

Maximum Seated Length 4-1/16"

Maximum Diameter 1-23/32"

Bulb T-12

Base Short Jumbo-Shell Octal 8-Pin with

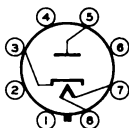
External Barriers (JETEC No.88-71)

Basing Designation for BOTTOM VIEW 8GB

Pin 1 - Internal
Connection-
Do Not Use

Pin 2 - Same As
Pin 1

Pin 3 - Cathode



Pin 4 - Same as
Pin 1

Pin 5 - Plate

Pin 6 - Same as
Pin 1

Pin 7 - Heater

Pin 8 - Heater

DAMPER SERVICE

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system^o

PEAK INVERSE PLATE VOLTAGE

(Absolute value)[#] 4500[•] max. volts

PEAK PLATE CURRENT 1200 max. ma

DC PLATE CURRENT 200 max. ma

PLATE DISSIPATION 8 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to
cathode (Absolute value) 4500^{•▲} max. voltsHeater positive with
respect to cathode 300[■] max. volts^o Without external shield.[□] As described in "Standards of Good Engineering Practice Concerning
Television Broadcast Stations," Federal Communications Commission.[#] This rating is applicable where the duty cycle of the voltage pulse
does not exceed 15 per cent of one horizontal scanning cycle. In a
525-line, 30 frame system, 15 per cent of one horizontal scanning
cycle is 10 microseconds.[•] Under no circumstances should this absolute value be exceeded.[▲] The dc component must not exceed 900 volts.[■] The dc component must not exceed 100 volts.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

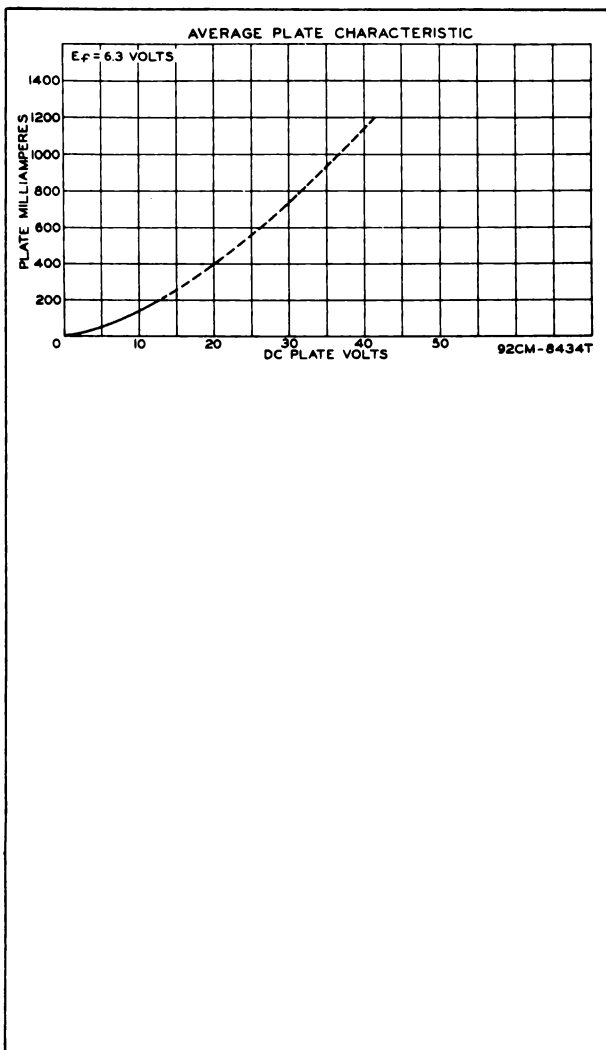
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BL4



6BL4

HALF-WAVE VACUUM RECTIFIER



MAR. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-8434T



6BK7-A

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

6BK7-A

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts

Current 0.4 amp

Direct Interelectrode Capacitances (Without external shield):

	Unit No. 1	Unit No. 2	
Grid to plate	1.8	1.8	μf
Grid to cathode, heater, and internal shield . . .	3	3	μf
Plate to cathode	0.22	0.22	μf
Plate to cathode, heater, and internal shield . . .	1	0.9	μf
Plate to grid, heater, and internal shield	2.4	2.4	μf
Cathode to grid, heater, and internal shield . . .	6	6	μf
Cathode to heater	2.8	3	μf
Grid of unit No.1 to grid of unit No.2	0.004 max.		μf
Plate of unit No.1 to plate of unit No.2 . . .	0.075 max.		μf

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Supply Voltage	150	volts
Cathode-Bias Resistor	56	ohms
Amplification Factor	43	
Plate Resistance (Approx.)	4600	ohms
Transconductance	9300	μmhos
Plate Current	18	ma
Grid Volts (Approx.) for plate current of 10 μamp	-11	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JETEC No.E9-1)
Base Designation for BOTTOM VIEW	9AJ

Pin 1-Plate of
Unit No.2
Pin 2-Grid of
Unit No.2
Pin 3-Cathode of
Unit No.2
Pin 4-Heater
Pin 5-Heater



Pin 6-Plate of
Unit No.1
Pin 7-Grid of
Unit No.1
Pin 8-Cathode of
Unit No.1
Pin 9-Internal
Shield

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BK7-A



6BK7-A

MEDIUM-MU TWIN TRIODE

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max. volts
GRID VOLTAGE:	
Negative bias value.	50 max. volts
PLATE DISSIPATION.	2.7 max. watts
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode. .	90 [•] max. volts
Heater positive with respect to cathode .	90 max. volts

- In cathode-drive circuits with direct-coupled drive, it is permissible for this voltage to be as high as 250 volts.

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6BL7-GT

MEDIUM-MU TWIN TRIODE

6BL7-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage. 6.3 ac or dc volts

Current. 1.5 amp

Direct Interelectrode

Capacitances:

Without
External
ShieldWith External
Shield No. 308
Tied to Cathode

Unit No. 1:

Grid to Plate. 4.2 4.2 μmf Input. 4.4 5.0 μmf Output. 1.1 3.4 μmf

Unit No. 2:

Grid to Plate. 4.0 4.0 μmf Input. 4.8 5.0 μmf Output. 1.2 3.2 μmf

Grid of Unit No. 1

to Grid of Unit No. 2 0.11 0.10 μmf

Plate of Unit No. 1

to Plate of Unit No. 2 1.5 1.2 μmf Characteristics, Amplifier Class A₁ (Each Unit):

Plate Voltage. 250 volts

Grid Voltage. -9 volts

Plate Current. 40 ma

Amplification Factor. 15

Plate Resistance. 2150 $\cdot$ ohmsTransconductance. 6200 μmhos

Grid-No. 1 Bias (Approx.) for

plate current of 25 μamp -25 volts

Grid-No. 1 Bias (Approx.) for plate voltage

of 600 volts and plate current of 50 μamp -60 volts

Mechanical:

Mounting Position. Any

Maximum Overall Length. 3-5/16"

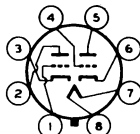
Maximum Seated Length. 2-3/4"

Maximum Diameter. 1-9/32"

Bulb T-9

Base. Short Intermediate-Shell Octal 8-Pin (JETEC No. B8-46)

Basing Designation for BOTTOM VIEW 8BD

Pin 1-Grid of
Unit No. 2Pin 2-Plate of
Unit No. 2Pin 3-Cathode of
Unit No. 2Pin 4-Grid of
Unit No. 1Pin 5-Plate of
Unit No. 1Pin 6-Cathode of
Unit No. 1

Pin 7-Heater

Pin 8-Heater

← Indicates a change

OCT. 1, 1953

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6BL7-GT



6BL7-GT

MEDIUM-MU TWIN TRIODE

VERTICAL DEFLECTION AMPLIFIER

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system*

DC PLATE SUPPLY VOLTAGE.	600 max.	volts
DC PLATE VOLTAGE	500 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^o	1800 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	500 max.	volts
DC CATHODE CURRENT	60 max.	ma
PLATE DISSIPATION.	10 max.	watts
Total for Both Units	12 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 max.	volts

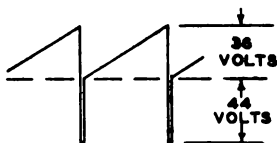
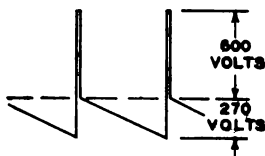
Typical Operation in a Vertical Deflection Circuit:

DC Plate Voltage	450	volts
Cathode-Bias Resistor.	1200	ohms
Grid-Input Voltage, Approx. (See Fig.1):		
Peak-to-peak sawtooth component.	36	volts
Negative peaking component	44	volts
DC Plate Current	11	ma
Plate-Output Voltage, Approx. (See Fig.2):		
Peak-to-peak sawtooth component.	270	volts
Peak positive pulse component.	600	volts

Maximum Circuit Values:

Grid-Circuit Resistance. 4.7 max. megohms

* As described in "Standards of Good Engineering Practice for Television Broadcast Stations", Federal Communications Commission.

^o The duration of the voltage pulse must not exceed 15 per cent of one scanning cycle. In a 525-line, 30-frame system, 15 per cent of one scanning cycle is 2.5 milliseconds.Fig. 1 - Waveform at
Grid of 6BL7-GTFig. 2 - Waveform at
Plate of 6BL7-GT

OCT. 1, 1953

TUBE DEPARTMENT

DATA

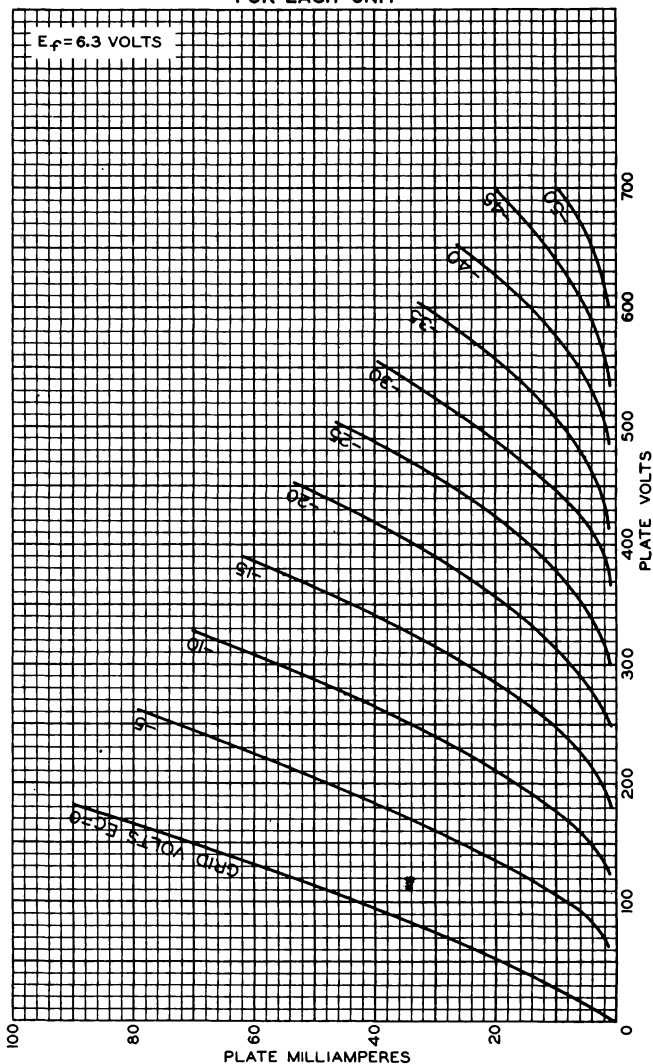
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6BL7-GT

6BL7-GT

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



OCT. 26, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8133



6BN6

6BN6

BEAM TUBE

7-PIN MINIATURE TYPE

For limiter & discriminator service in FM & TV applications

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances:^o

Grid No.1 to cathode & internal

shields, plate, grid No.3,

grid No.2, and heater. 4.2 μf

Grid No.3 to cathode & internal

shields, plate, grid No.2,

grid No.1, and heater. 3.3 μf Grid No.1 to grid No.3 0.004 max. μf

Mechanical:

Mounting Position. Any

Maximum Overall Length. 2-5/8"

Maximum Seated Length. 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip) . . . 2" $\pm$ 3/32"

Maximum Diameter 3/4"

Dimensional Outline. See General Section

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 7DF

Pin 1-Cathode,
Internal
Shields

Pin 2-Grid No.1

Pin 3-Heater



Pin 4-Heater

Pin 5-Grid No.2

Pin 6-Grid No.3

Pin 7-Plate

LIMITER & DISCRIMINATOR SERVICE

Maximum Ratings, Design-Center Values:

PLATE-SUPPLY VOLTAGE 300 max. volts

GRID-No.2 VOLTAGE. 100 max. volts

GRID-No.1 VOLTAGE:

Positive peak value. 55 max. volts

CATHODE CURRENT. 11.5 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . . 90 max. volts

Heater positive with respect to cathode. . . 90 max. volts

^o without external shield.



6BQ6-GT

BEAM POWER TUBE

6BQ6-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	1.2	amp
Direct Interelectrode Capacitances (Approx.; No external shield):		
Grid No.1 to plate	0.6	μ f ←
Grid No.1 to cathode & grid No.3, heater, and grid No.2	15	μ f
Plate to cathode & grid No.3, heater, and grid No.2	7.5	μ f

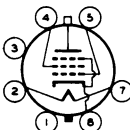
Characteristics, Class A₁ Amplifier:

Plate Voltage	60*	150	250	volts
Grid-No.2 (Screen) Voltage . .	150*	150	150	volts
Grid-No.1 (Control-Grid) Voltage	0	-22.5	-22.5	volts
Mu-Factor, Grid No.2 to Grid No.1	-	4.3	-	
Plate Resistance	-	-	20000	ohms
Transconductance	-	-	5500	μ hos
Plate Current	225	-	55	ma
Grid-No.2 Current	25	-	2.1	ma
Grid-No.1 Voltage (Approx.) for plate current of 1 ma .	-	-	-46	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-7/8"
Seated Length	3-5/32" $\pm$ 5/32"
Maximum Diameter	1-9/32"
Bulb	T-9
Cap	Skirted Miniature (JETEC No.C1-3)
Base	Intermediate-Shell Octal 7-Pin (JETEC No.B7-7), Intermediate-Shell Octal 6-Pin (JETEC No.B6-81), Short Intermediate-Shell Octal 7-Pin (JETEC No.B7-59), or Short Intermediate-Shell Octal 6-Pin (JETEC No.B6-84)
Basing Designation for BOTTOM VIEW	6AM

- Pin 1 ♦ No Connection
- Pin 2 - Heater
- Pin 3 - No Connection
- Pin 4 - Grid No.2



- Pin 5 - Grid No.1
- Pin 7 - Heater
- Pin 8 - Cathode,
Grid No.3
- Cap - Plate

* Applied for very short interval so as not to damage tube.

♦ On the 6-pin bases, pin no.1 as well as pin no.6 is omitted.

← Indicates a change

AUG. 16, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6BQ6-GT



6BQ6-GT

BEAM POWER TUBE

HORIZONTAL DEFLECTION AMPLIFIER

→ **Maximum Ratings, Design-Center Values Except as Noted:***For operation in a 525-line, 30-frame system**

DC PLATE SUPPLY VOLTAGE		
(Including Boost Voltage)	550 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE*	5500 max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE*	1250 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	175 max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE*	300 max.	volts
CATHODE CURRENT:		
Peak	400 max.	ma
DC	110 max.	ma
GRID-No.2 INPUT	2.5 max.	watts
PLATE DISSIPATION#	11 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 max.	volts
BULB TEMPERATURE (At hottest point on		
bulb surface)	220 max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance 0.47 max. megohm

• As described in "Standards of Good Engineering Practice concerning Television Broadcast Stations", Federal Communications Commission.

• under no circumstances should this absolute value be exceeded.

* The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.

▲ The dc component must not exceed 100 volts.

→ indicates a change

AUG. 16, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

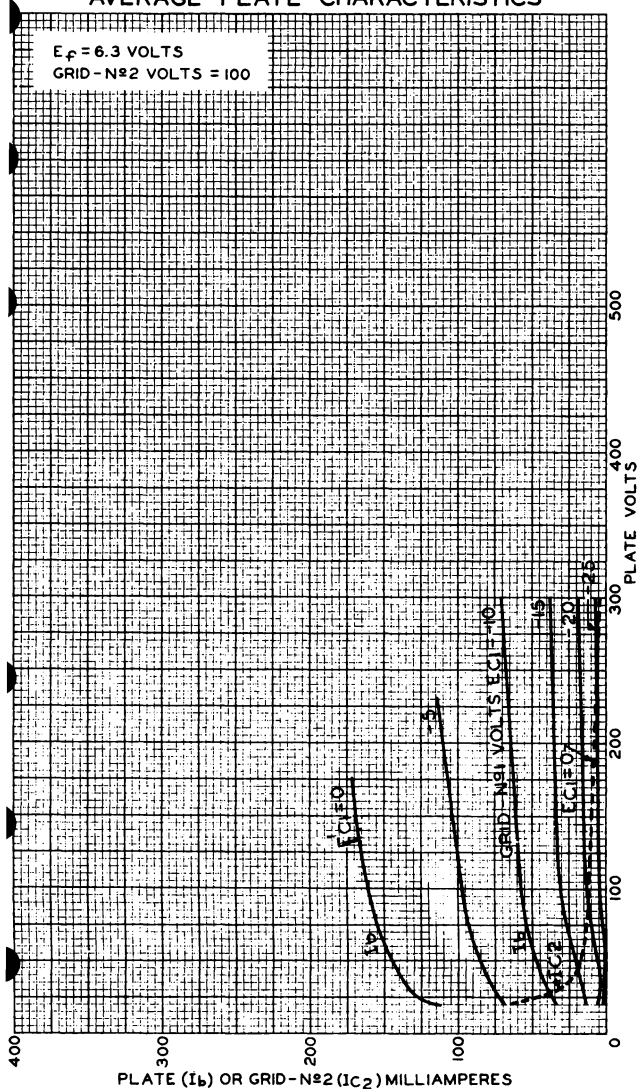
DATA



6BQ6-GT

6BQ6-GT

AVERAGE PLATE CHARACTERISTICS



MAR. 6, 1950

TUBE DEPARTMENT

92CM-7459

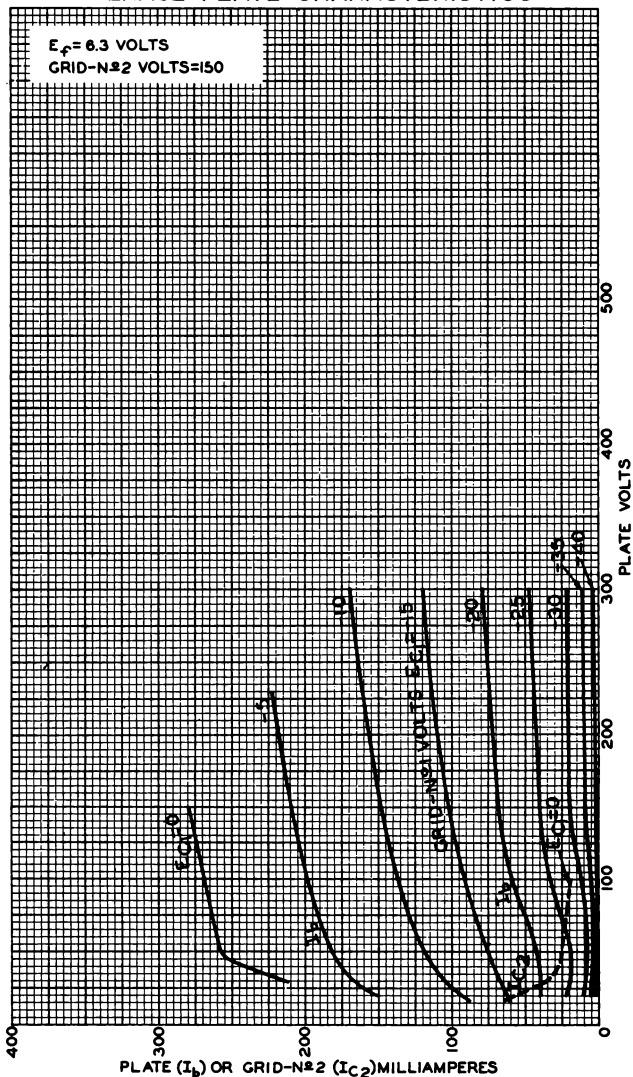
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BQ6-GT



6BQ6-GT

AVERAGE PLATE CHARACTERISTICS



MAR. 7, 1950

TUBE DEPARTMENT

92CM-7460

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

**6BQ6-GTB**

6BQ6-GTB/6CU6 **BEAM POWER TUBE**

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts
 Current. 1.2 amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate 0.6 μ f
 Grid No.1 to cathode & grid No.3,
 grid No.2, and heater. 15 μ f
 Plate to cathode & grid No.3,
 grid No.2, and heater. 7.5 μ f

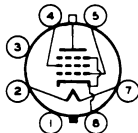
Characteristics, Class A₁ Amplifier:

Plate Voltage.	60	150	250	volts
Grid No.2 (Screen) Voltage	150	150	150	volts
Grid No.1 (Control-Grid) Voltage .	0	-22.5	-22.5	volts
Mu-Factor, Grid No.2 to Grid No.1	-	4.3	-	
Plate Resistance	-	-	18000	ohms
Transconductance	-	-	6000	μ mhos
Plate Current.	270*	-	65	ma
Grid-No.2 Current.	30*	-	2.1	ma
Grid-No.1 Voltage (Approx.) for plate current of 1 ma.	-	-	-46	volts

Mechanical:

Mounting Position. Any
 Maximum Overall Length 3-7/8"
 Seated Length. 3-5/32" $\pm$ 5/32"
 Maximum Diameter 1-9/32"
 Bulb T-9
 Cap Skirted Miniature (JETEC No.C1-3)
 Base Intermediate-Shell Octal 7-Pin (JETEC No.B7-7),
 Intermediate-Shell Octal 6-Pin (JETEC No.B6-81),
 Short Intermediate-Shell Octal 7-Pin
 with External Barriers (JETEC No.B7-59),
 or Short Intermediate-Shell Octal 6-Pin
 with External Barriers (JETEC No.B6-84)
 Basing Designation for BOTTOM VIEW 6AM

Pin 1 $\blacklozenge$ - No Connection
 Pin 2 - Heater
 Pin 3 - No Connection
 Pin 4 - Grid No.2



Pin 5 - Grid No.1
 Pin 7 - Heater
 Pin 8 - Cathode,
 Grid No.3
 Cap - Plate

^o without external shield.

* These values can be measured by a method involving a recurrent wave form such that the plate dissipation and grid-No.2 input will be kept within ratings in order to prevent damage to the tube.

$\blacklozenge$ On the 6-pin bases, pin 1 as well as pin 6 is omitted.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BQ6-GTB



6BQ6-GTB

BEAM POWER TUBE

HORIZONTAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	600	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum) [⊙]	6000 [■]	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1250	max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	200	max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-50	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 (CONTROL-GRID) VOLTAGE	300	max.	volts
CATHODE CURRENT:			
Peak	400	max.	ma
Average	112.5	max.	ma
GRID-No.2 INPUT	2.5	max.	watts
PLATE DISSIPATION†	11	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200	max.	volts
Heater positive with respect to cathode	200 [▲]	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)	220	max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance: For grid resistor-bias operation†.	1.0	max.	megohm
---	-----	------	--------

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

[■] Under no circumstances should this absolute value be exceeded.

[⊙] The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

† It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.

[▲] The dc component must not exceed 100 volts.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

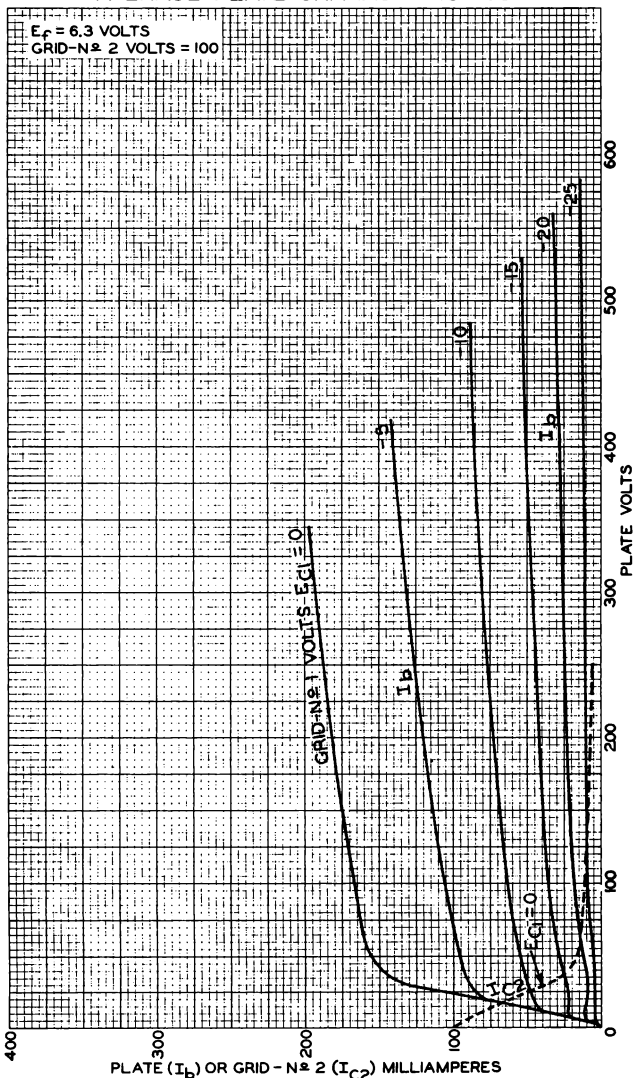
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6BQ6-GTB

6BQ6-GTB

AVERAGE PLATE CHARACTERISTICS



JAN. 11, 1955

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

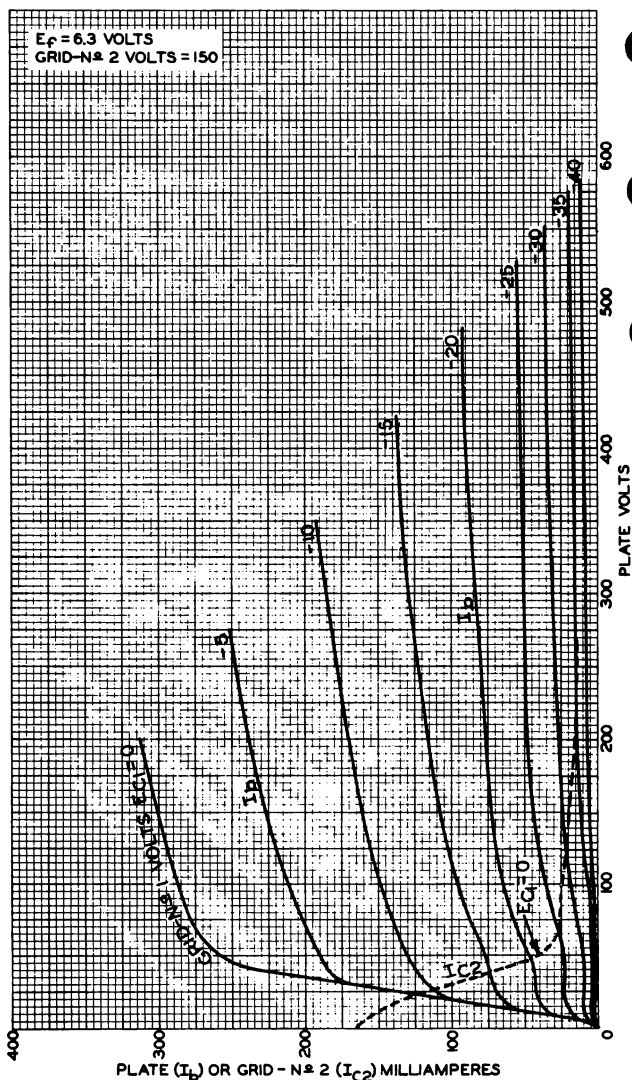
92CM-8500

6BQ6-GTB



6BQ6-GTB

AVERAGE PLATE CHARACTERISTICS



JAN. 11, 1955

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8501



6BQ7-A

MEDIUM-MU TWIN TRIODE

LOW-NOISE 9-PIN MINIATURE TYPE
For Driven RF-Grounded-Grid Circuits

6BQ7-A

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage. 6.3 ac or dc volts
Current. 0.4 amp

Direct Interelectrode Capacitances (According to RTMA Standard ET-109-A with external shield No.315):

	Unit No. 1	Unit No. 2	
Grid to Plate.	1.15	1.15	$\mu\mu\text{f}$
Input.	2.85	—	$\mu\mu\text{f}$
Input (Grounded Grid).	—	4.95	$\mu\mu\text{f}$
Output.	1.35	—	$\mu\mu\text{f}$
Output (Grounded Grid).	—	2.27	$\mu\mu\text{f}$
Plate to Cathode.	0.15 max.	0.15 max.	$\mu\mu\text{f}$
Heater to Cathode.	2.65	2.70	$\mu\mu\text{f}$
Plate of Unit No.1 to Plate of Unit No.2		0.010 max.	$\mu\mu\text{f}$
Plate of Unit No.2 to Plate & Grid of Unit No.1		0.024 max.	$\mu\mu\text{f}$

Characteristics, Amplifier Class A:

Plate Voltage.	150	volts
Cathode-Bias Resistor.	220	ohms
Amplification Factor.	39	
Plate Resistance.	6100	ohms
Transconductance.	6400	μmhos
Plate Current.	9	ma
Grid Volts (Approx.) for plate current of 10 μamp	-10	volts

Mechanical:

Mounting Position.	Any
Maximum Overall Length.	2-3/16"
Maximum Seated Length.	1-15/16"
Maximum Diameter.	7/8"
Bulb.	T-6-1/2
Base.	Small-Button Noval 9-Pin (JETEC No.E9-1)
Basing Designation for BOTTOM VIEW.	9AJ

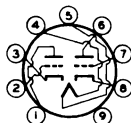
Pin 1-Plate of
Triode No.2

Pin 2-Grid of
Triode No.2

Pin 3-Cathode of
Triode No.2

Pin 4-Heater

Pin 5-Heater



Pin 6-Plate of
Triode No.1

Pin 7-Grid of
Triode No.1

Pin 8-Cathode of
Triode No.1

Pin 9-Internal
Shield

NOV. 1, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6BQ7-A



6BQ7-A

MEDIUM-MU TWIN TRIODE

AMPLIFIER - Class A

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	250 [▲]	max.	volts
PLATE DISSIPATION.	2	max.	watts
CATHODE CURRENT.	20	max.	ma
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode .	200 [▲]	max.	volts
Heater positive with respect to cathode.	200	max.	volts

Typical Operation in Push-Pull RF-Grounded-Grid Circuit:

Values are for Each Unit

Plate Voltage.	150	volts
Grid Voltage*.	-2	volts
Cathode Resistor (Common to both units). .	100	ohms
Plate Current.	10	ma

Typical Operation in RF-Grounded-Grid Circuit

with Direct-Coupled Drive:

Unit No. 1 (driver tube) is directly coupled to Unit No. 2
(driven rf-grounded-grid amplifier tube) as
shown in accompanying circuit

Unit No. 1 Unit No. 2

Plate Supply Voltage	250	250	volts
Plate Voltage.	135	115	volts
Grid Voltage	-1	-	volt
Grid Resistor.	-	0.5	megohm
Plate Current.	10	10	ma
Grid Current	0	0	ma
Grid Voltage (Approx.) for plate current of 10 μ amp . .	-14	-	volt
Peak Heater-Cathode Voltage:			
Heater negative with respect to cathode	1	250	volts

Maximum Circuit Values (Each Unit):

Grid-Circuit Resistance. . . .	0.5 max.	megohm
--------------------------------	----------	--------

* Obtained from cathode resistor.

[▲] under cutoff conditions in rf-grounded-grid circuit with direct-coupled drive, it is permissible for this voltage to be as high as 300 volts.

NOV. 1, 1952

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

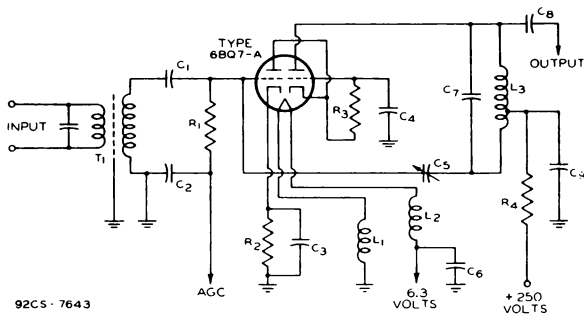


6BQ7-A

6BQ7-A

MEDIUM-MU TWIN TRIODE

RCA-6BQ7-A in Driven RF-Grounded-Grid Amplifier Circuit with Direct-Coupled Drive



92CS-7643

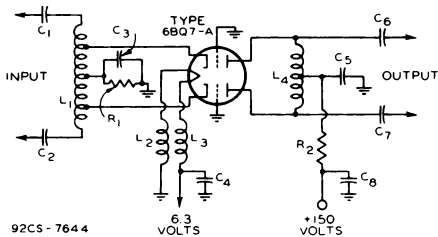
- C1: 33 μ mf, 400 volts
 C2: 1000 μ mf, 400 volts
 C3: 1000 μ mf, 400 volts
 C4: 1000 μ mf, 400 volts
 C5: 0.5 to 1.5 μ mf, 400 volts
 C6: 1000 μ mf, 400 volts
 C7: 2 μ mf, 400 volts
 C8: 33 μ mf, 400 volts
 C9: 1000 μ mf, 400 volts
 R1: 10000 ohms, 0.5 watt
 R2: 100 ohms, 0.5 watt
 R3: 500000 ohms, 0.5 watt
 R4: 100 ohms, 0.5 watt

L1, L2: Bifilar chokes, each 10 turns No.18 enamel

L3: Tuned circuit element of tuner. Value depends on distributed circuit capacitances. To determine tap point, tap down to 80 to 90% of total number of turns

T1: Tuned circuit element of tuner. Value depends on distributed circuit capacitances.

RCA-6BQ7-A in Push-Pull RF-Grounded-Grid Circuit



92CS-7644

- C1 C2 C3 C4 C5:
 1000 μ mf, 400 volts
 C6 C7: 100 μ mf, 400 volts
 C8: 1000 μ mf, 400 volts
 R1 R2: 100 ohms, 0.5 watt

L1 L4: Tuned circuit elements of tuner. Values depend on distributed circuit capacitances.

L2 L3: Bifilar chokes, each 10 turns of No.18 enamel wire, 1/4" coil form.

Devices and arrangements shown or described herein may use patents of RCA or others. Information contained herein is furnished without responsibility by RCA for its use and without prejudice to RCA's patent rights.

NOV. 1, 1952

TUBE DEPARTMENT

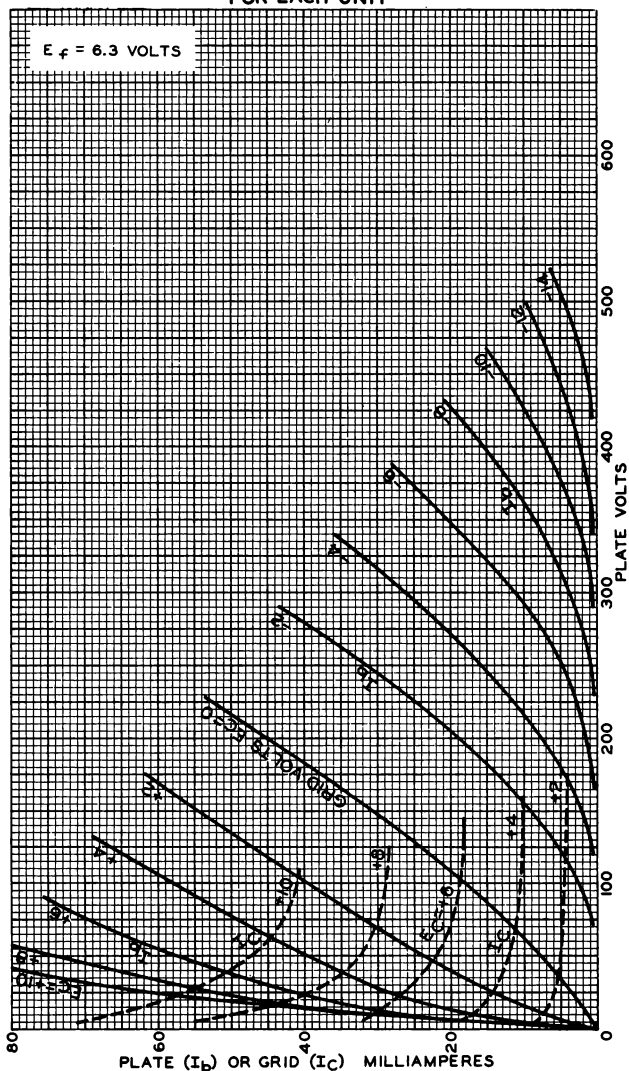
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CE-7643-7644



6BQ7-A

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



AUG. 25, 1952

TUBE DEPARTMENT
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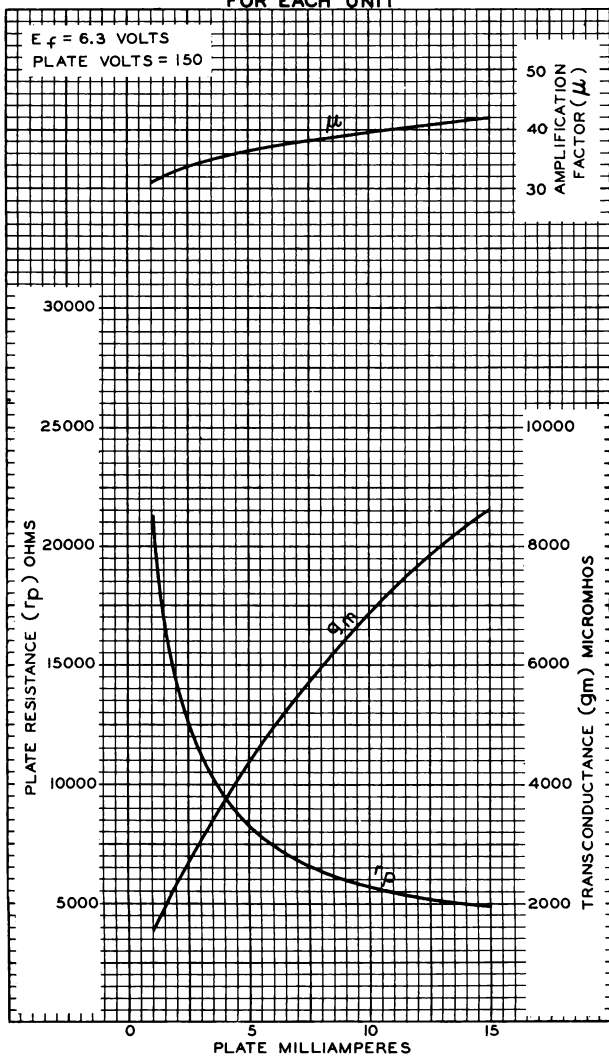
92CM-7536RI



6BQ7-A

6BQ7-A

AVERAGE CHARACTERISTICS
FOR EACH UNIT



AUG. 27, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7538R1

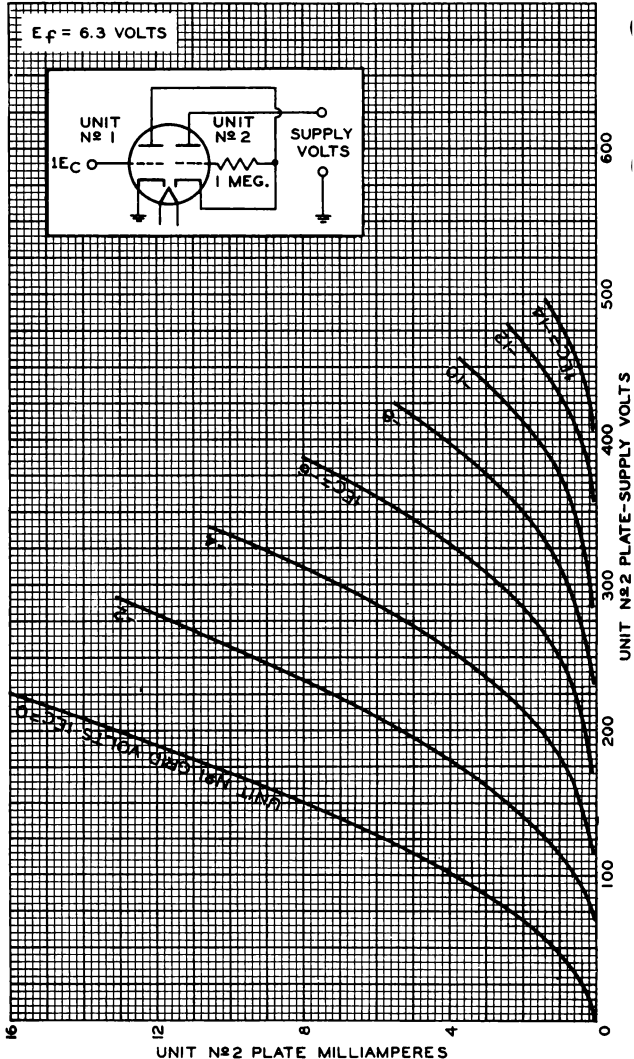
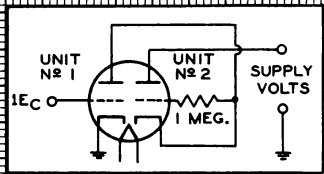
6BQ7-A



6BQ7-A

AVERAGE PLATE CHARACTERISTICS
AS DIRECT-COUPLED DRIVEN RF-GROUNDED-GRID AMPLIFIER

$E_f = 6.3$ VOLTS



OCT. 3, 1950

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7549R1



6BQ7-A

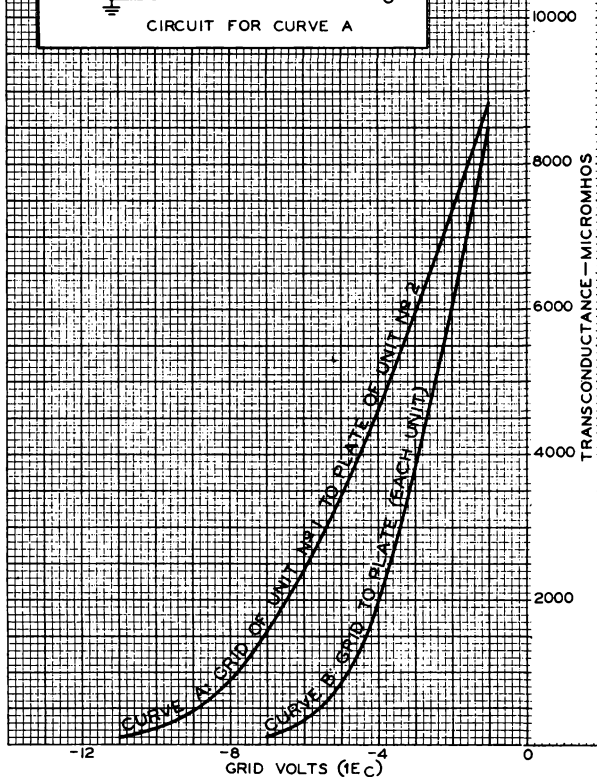
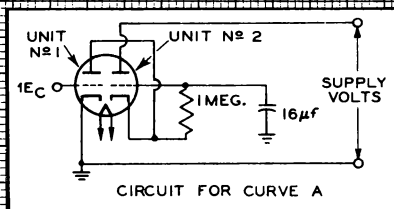
6BQ7-A

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS

CURVE A: SUPPLY VOLTS = 300

CURVE B: PLATE VOLTS = 150



AUG. 25, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7550R1



6BR8-A

6BR8-A

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

With heater having controlled warm-up time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage.	6.3	ac or dc volts
Current.	0.45	amp
Warm-up time (Average).	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
Triode Unit:			
Grid to plate.	1.8	1.8	$\mu\mu\text{f}$
Grid to cathode and heater.	2.5	2.5	$\mu\mu\text{f}$
Plate to cathode and heater.	0.4	1	$\mu\mu\text{f}$
Pentode Unit:			
Grid No.1 to plate	0.015 max.	0.008 max.	$\mu\mu\text{f}$
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater	5	5	$\mu\mu\text{f}$
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater	2.6	3.5	$\mu\mu\text{f}$
Heater to cathode (Each unit).	3	3 ^o	$\mu\mu\text{f}$

Characteristics:

	Triode Unit	Pentode Unit	
Plate-Supply Voltage	150	250	volts
Grid-No.2 (Screen-grid) Supply Voltage	—	110	volts
Cathode Resistor	56	68	ohms
Amplification Factor	40	—	
Plate Resistance (Approx.)	5000	400000	ohms
Transconductance	8500	5200	μmhos
Plate Current.	18	10	ma
Grid-No.2 Current.	—	3.5	ma
Grid-No.1 Voltage (Approx.) for plate $\mu\text{a} = 10$	-12	-10	volts

Mechanical:

Operating Position	Any
Maximum Overall Length	2-3/16"

^o, [•]: See next page.

6BR8-A

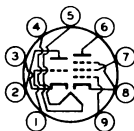


6BR8-A

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

Maximum Seated Length 1-15/16"
 Length, Base Seat to Bulb Top (Excluding tip) . . 1-9/16" $\pm$ 3/32"
 Diameter. 0.750" to 0.875"
 Dimensional Outline See General Section
 Bulb. T6-1/2
 Base. Small-Button Noval 9-Pin (JEDEC No.E9-1)
 Basing Designation for BOTTOM VIEW. 9FA

Pin 1—Triode Grid
 Pin 2—Triode Plate
 Pin 3—Triode Cathode
 Pin 4—Heater
 Pin 5—Heater
 Pin 6—Pentode Plate
 Pin 7—Pentode
 Grid No.2



Pin 8—Pentode
 Cathode,
 Pentode
 Grid No.3,
 Internal
 Shield
 Pin 9—Pentode
 Grid No.1

CONVERTER SERVICE

Maximum Ratings, Design-Center Values:

	Triode Unit as Osc.	Pentode Unit as Mixer	
PLATE VOLTAGE	300 max.	300 max.	volts
GRID-No.2 (SCREEN-GRID)			
SUPPLY VOLTAGE.	—	300 max.	volts
GRID-No.2 VOLTAGE		See Grid-No.2 Input	

Rating Chart at front of Receiving Tube Section

GRID-No.1 (CONTROL-GRID)			
VOLTAGE:			
Positive-bias value	0 max.	0 max.	volts
GRID-No.2 INPUT:			
For grid-No.2 voltages			
up to 150 volts	—	0.5 max.	watt
For grid-No.2 voltages			
between 150 and			
300 volts	—	See Grid-No.2 Input	

Rating Chart at front of Receiving Tube Section

PLATE DISSIPATION	2.7 max.	2.8 max.	watts
PEAK HEATER-CATHODE			
VOLTAGE:			
Heater negative with			
respect to cathode.	200 max.	200 max.	volts
Heater positive with			
respect to cathode.	200 [▲] max.	200 [▲] max.	volts

° With external shield JEDEC No.315 connected to cathode of unit under test except as noted.

● With external shield JEDEC No.315 connected to ground.

▲ The dc component must not exceed 100 volts.

Curves shown under Type 6U8-A also apply to the 6BR8-A



6BY5-GA

6BY5-GA FULL-WAVE VACUUM RECTIFIER

For Television Damper Service

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts
Current 1.6 amp

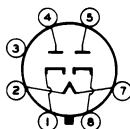
Mechanical:

Mounting Position Any
Maximum Overall Length 3-7/8"
Maximum Seated Length 3-5/16"
Maximum Diameter 1-9/16"
Bulb T-12
Base Medium-Shell Octal 7-Pin (JETEC No. B7-12),
or Short-Medium-Shell Octal 7-Pin
with External Barriers (JETEC No. B7-119)

Basing Designation for BOTTOM VIEW 6CN

Pin 1 - Cathode of
Unit No. 2

Pin 2 - Heater

Pin 3 - No Connec-
tion - Do
Not Use •Pin 4 - Plate of
Unit No. 2Pin 5 - Plate of
Unit No. 1

Pin 7 - Heater

Pin 8 - Cathode of
Unit No. 1

DAMPER SERVICE

Values are for Each Unit

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

PEAK INVERSE PLATE VOLTAGE

(Absolute maximum)[#] 3000[■] max. volts

PEAK PLATE CURRENT 525 max. ma

DC PLATE CURRENT 175 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . . . 450 max. volts

Heater positive with respect to cathode . . . 100 max. volts

• Socket terminal No. 3 should not be used as tie point.

□ As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

This rating is applicable where the duty cycle of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

■ Under no circumstances should this absolute value be exceeded.

MAY 1, 1955

TUBE DIVISION

TENTATIVE DATA

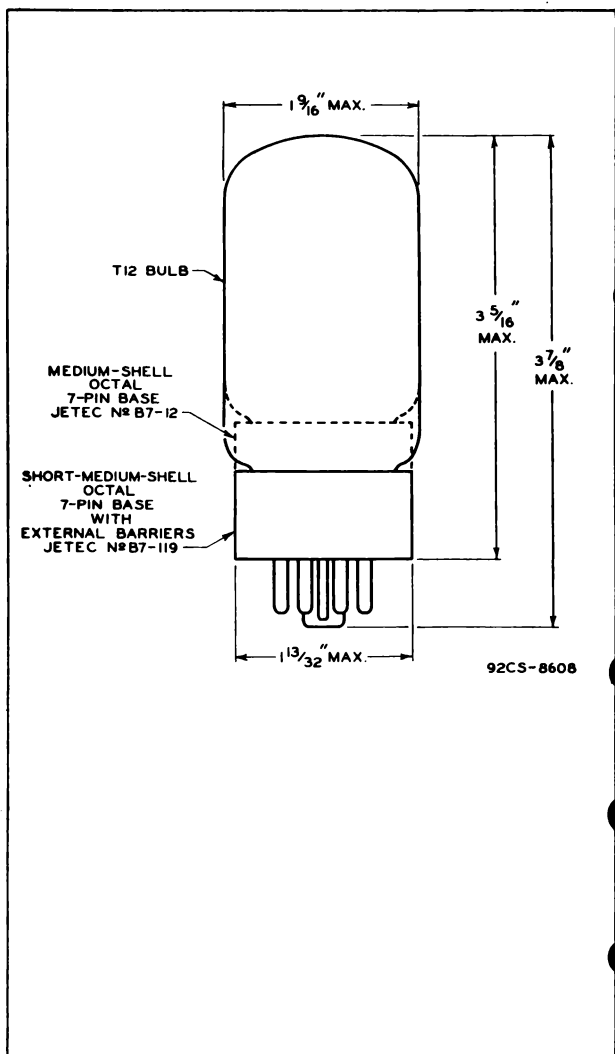
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6BY5-GA



6BY5-GA

FULL-WAVE VACUUM RECTIFIER



MAY 1, 1955

TUBE DIVISION

CE-8608

**6BY6****PENTAGRID AMPLIFIER**

MINIATURE TYPE

6BY6**GENERAL DATA****Electrical:**

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances*:

Grid No.1 to Plate 0.08 max. μf Grid No.3 to Plate 0.35 max. μf Grid No.1 to Grid No.3 0.15 max. μf

Grid No.1 to All Other Electrodes

and Heater 5.4 μf

Grid No.3 to All Other Electrodes

and Heater 6.9 μf

Plate to All Other Electrodes

and Heater 7.6 μf **Characteristics, Class A₁ Amplifier:**

Plate Voltage 250 volts

Grids-No.2-and-No.4 Voltage 100 volts

Grid-No.3 Voltage -2.5 volts

Grid-No.1 Voltage -2.5 volts

Grid-No.3-to-Plate Transconductance 500 μmhos Grid-No.1-to-Plate Transconductance 1900 μmhos

Plate Current 6.5 ma

Grids-No.2-and-No.4 Current 9 ma

Grid-No.3 Volts (Approx.) for plate

current of 35 μamp and grid-No.1

volts = -4 -15 volts

Grid-No.1 Volts (Approx.) for plate

current of 35 μamp and grid-No.3

volts = 0 -12 volts

Mechanical:

Mounting Position Any

Maximum Overall Length 2-1/8"

Maximum Seated Length 1-7/8"

Length from Base Seat to Bulb Top

(Excluding tip) 1-1/2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

BOTTOM VIEW

Pin 1: Grid No.1

Pin 2: Cathode,
Grid No.5

Pin 3: Heater

Pin 4: Heater



Pin 5: Plate

Pin 6: Grid No.2,
Grid No.4

Pin 7: Grid No.3

*: With no external shield.

MARCH 1, 1954

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6BY6



6BY6

PENTAGRID AMPLIFIER

GATED AMPLIFIER SERVICE

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max. volts
GRIDS-No.2-and-No.4 VOLTAGE	See Rating Curve at front of this Section
GRIDS-No.2-and-No.4 SUPPLY VOLTAGE	300 max. volts
GRID-No.3 SUPPLY VOLTAGE:	
Negative Bias Value	50 max. volts
Positive Bias Value	0 max. volts
Positive Peak Value	25 max. volts
GRID-No.1 SUPPLY VOLTAGE:	
Negative Bias Value	100 max. volts
PLATE DISSIPATION	2 max. watts
GRID-No.3 INPUT	0.1 max. watt
GRIDS-No.2-and-No.4 INPUT	1 max. watt
GRID-No.1 INPUT	0.1 max. watt
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode .	200 max. volts
Heater positive with respect to cathode .	200*max. volts

Characteristics as Sync Separator and Sync Clipper:

Plate Voltage	10	volts
Grid-No.3 Voltage	0	volts
Grids-No.2-and-No.4 Voltage	25	volts
Grid-No.1 Voltage	0	volts
Plate Current	1.4	ma
Grids-No.2-and-No.4 Current	3.5	ma
Grid-No.3 Bias Volts (Approx.) for plate voltage of 25 volts, grids-No.2-and-No.4 voltage of 25 volts, grid-No.1 voltage of 0 volts, and plate current of 50 μ amp		
	-2.5	volts
Grid-No.1 Bias Volts (Approx.) for plate voltage of 25 volts, grids-No.2-and-No.4 voltage of 25 volts, grid-No.3 voltage of 0 volts, and plate current of 50 μ amp		
	-2.3	volts

Maximum Circuit Values:

Grid-No.1 or Grid-No.3-Circuit Resistance:	
For fixed-bias operation	0.5 max. megohm
For cathode-bias operation	1.0 max. megohm

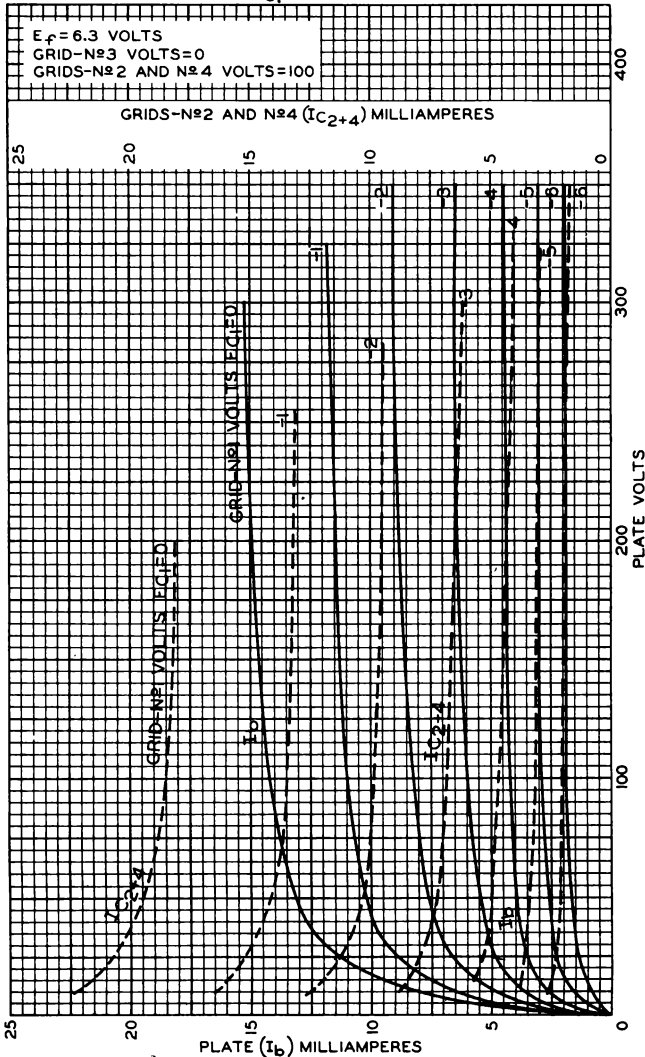
* The dc component must not exceed 100 volts.



6BY6

AVERAGE OPERATION CHARACTERISTICS
WITH E_{c1} AS VARIABLE

6BY6



NOV. 5, 1953

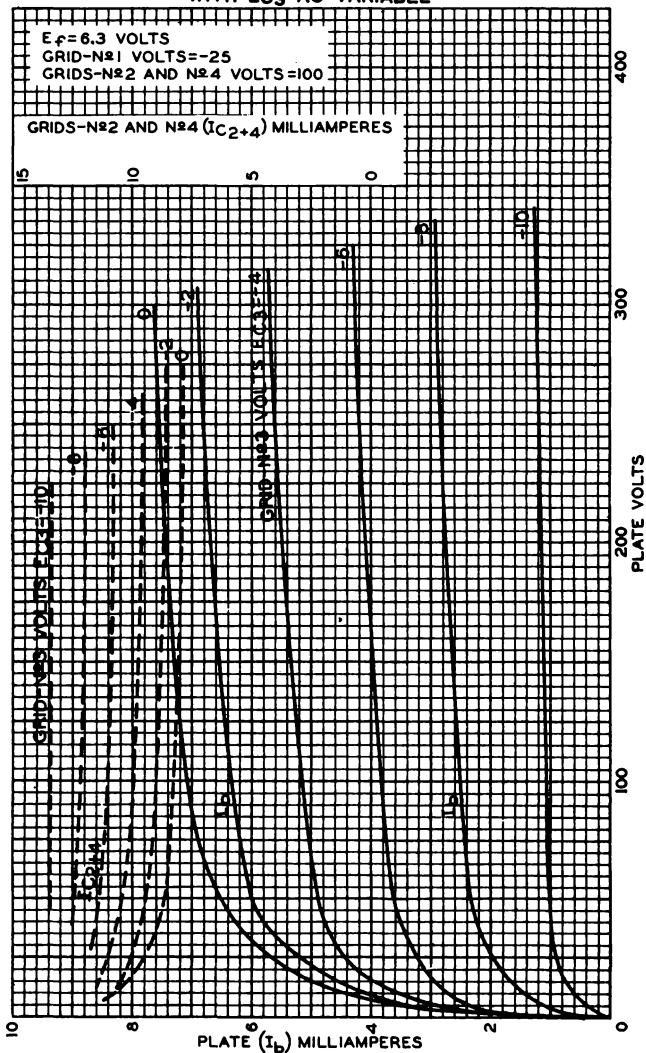
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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8140



6BY6

AVERAGE OPERATION CHARACTERISTICS WITH EC₃ AS VARIABLE



NOV. 5, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

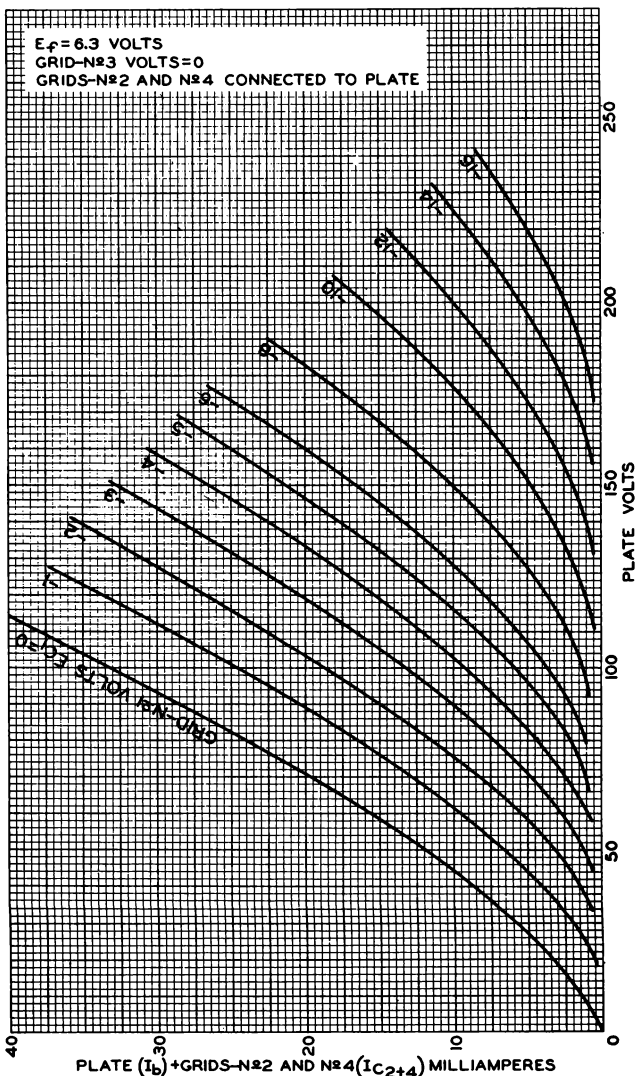
92CM-8139



6BY6

6BY6

AVERAGE PLATE CHARACTERISTICS



NOV.5,1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8138



6BZ6

SEMIREMOTE-CUTOFF PENTODE

7-PIN MINIATURE TYPE

6BZ6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances:

	<i>Without External Shield</i>	<i>With External Shield^o</i>	
Grid No.1 to plate	0.02 max.	0.015 max.	μf
Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater	7.5	7.5	μf
Plate to cathode, grid No.3 & internal shield, grid No.2, and heater	1.8	2.8	μf

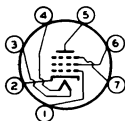
Characteristics, Class A₁ Amplifier:

Plate Voltage.	200	volts
Grid No.3.	<i>Connected to cathode at socket</i>	
Grid-No.2 Voltage.	150	volts
Cathode-Bias Resistor.	180	ohms
Plate Resistance (Approx.)	0.6	megohm
Transconductance	6100	μmhos
Plate Current.	11	ma
Grid-No.2 Current.	2.6	ma
Grid-No.1 Voltage (Approx.) for transconductance of 50 μmhos	-23	volts

Mechanical:

Mounting Position.	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length.	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/2" $\pm$ 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW	7CM

Pin 1 - Grid No.1
Pin 2 - Cathode
Pin 3 - Heater
Pin 4 - Heater
Pin 5 - Plate



Pin 6 - Grid No.2
Pin 7 - Grid No.3,
Internal
Shield

^o With external shield JETEC No.316 connected to cathode.

MAY 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BZ6



6BZ6

SEMIREMOTE-CUTOFF PENTODE

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300	max.	volts
GRID-No.3 (SUPPRESSOR) VOLTAGE.	0	max.	volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	300	max.	volts
GRID-No.2 VOLTAGE.	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>		

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value.	0	max.	volts
PLATE DISSIPATION.	2.5	max.	watts

GRID-No.2 INPUT:

For grid-No.2 voltages up to 150 volts	0.5	max.	watt
For grid-No.2 voltages between 150 and 300 volts.	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>		

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . . .	200	max.	volts
Heater positive with respect to cathode . . .	200 [▲]	max.	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.25	max.	megohm
For cathode-bias operation	1.0	max.	megohm

[▲] The dc component must not exceed 100 volts.

MAY 1, 1955

TUBE DIVISION

TENTATIVE DATA

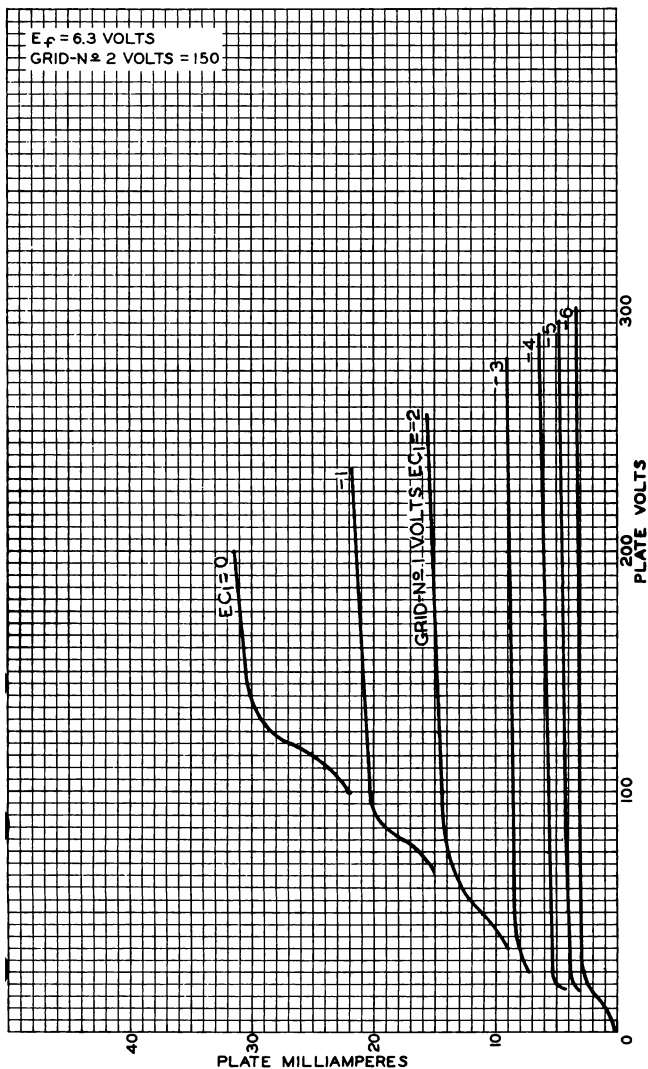
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6BZ6

6BZ6

AVERAGE PLATE CHARACTERISTICS



JAN. 25, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

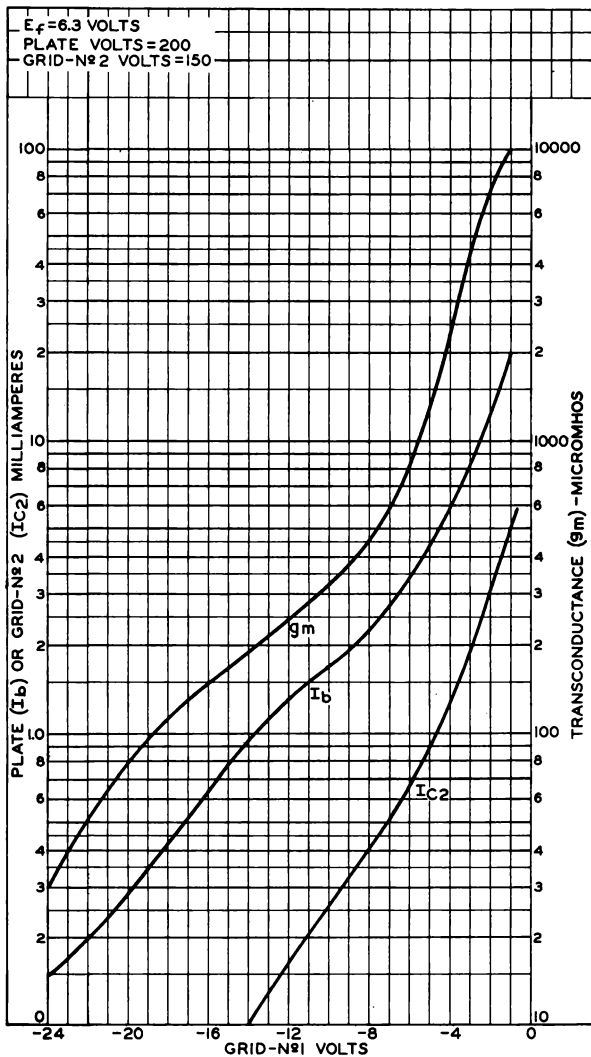
92CM - 8508

6BZ6



6BZ6

AVERAGE CHARACTERISTICS



JAN. 26, 1955

 TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8509



6BZ7

6BZ7

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts

Current 0.4 amp

Direct Interelectrode Capacitances (With external shield

JETEC No.315 connected to cathode):

	Unit No.1	Unit No.2	
Grid to plate	1.15	1.15	$\mu\mu\text{f}$
Grid to cathode, heater, and internal shield.	2.5	—	$\mu\mu\text{f}$
Plate to cathode.	0.15 max.	0.15 max.	$\mu\mu\text{f}$
Plate to cathode, heater, and internal shield.	1.35	—	$\mu\mu\text{f}$
Plate to grid, heater, and internal shield.	—	2.27	$\mu\mu\text{f}$
Cathode to grid, heater, and internal shield.	—	4.95	$\mu\mu\text{f}$
Cathode to heater	2.6	2.7	$\mu\mu\text{f}$
Plate of unit No.1 to plate of unit No.2	0.010 max.		$\mu\mu\text{f}$
Plate of unit No.2 to plate & grid of unit No.1	0.024 max.		$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Supply Voltage	150	volts
Cathode-Bias Resistor	220	ohms
Amplification Factor	38	
Plate Resistance	5600	ohms
Transconductance	6800	μmhos
Plate Current	10	ma
Grid Volts (Approx.) for plate current of 10 μamp	-11	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JETEC No.E9-1)
Basing Designation for BOTTOM VIEW	9AJ

Pin 1—Plate of
Unit No.2
Pin 2—Grid of
Unit No.2
Pin 3—Cathode of
Unit No.2
Pin 4—Heater
Pin 5—Heater



Pin 6—Plate of
Unit No.1
Pin 7—Grid of
Unit No.1
Pin 8—Cathode of
Unit No.1
Pin 9—Internal
Shield

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BZ7



6BZ7

MEDIUM-MU TWIN TRIODE

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	250 [▲] max.	volts
PLATE DISSIPATION	2 max.	watts
CATHODE CURRENT	20 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	200 [▲] max.	volts
Heater positive with respect to cathode .	200 max.	volts

[▲] In cathode-drive circuits with direct-coupled drive, it is permissible for this voltage to be as high as 250 volts.

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6C4

6C4

MEDIUM-MU TRIODE*For use in FM and other HF circuits***GENERAL DATA****Electrical:**

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.15 amp

Direct Interelectrode Capacitances:^oGrid to plate 1.6 μf Grid to cathode and heater 1.8 μf Plate to cathode and heater 1.3 μf **Mechanical:**

Mounting Position Any

Maximum Overall Length 2-1/8" ←

Maximum Seated Length 1-7/8" ←

Length, Base Seat to Bulb Top (Excluding tip) . 1-1/2" $\pm$ 3/32" ←

Maximum Diameter 3/4" ←

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No. E7-1) ←

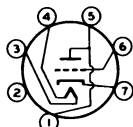
Basing Designation for BOTTOM VIEW 6BG

Pin 1 - Plate

Pin 2 - Internal Con-
nection

Do Not Use

Pin 3 - Heater



Pin 4 - Heater

Pin 5 - Plate

Pin 6 - Grid

Pin 7 - Cathode

AMPLIFIER - Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE 300 max. volts

PLATE DISSIPATION 3.5 max. watts ←

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . 200 max. volts

Heater positive with respect to cathode . 200[■] max. volts**Characteristics:**

Plate Voltage 100 250 volts

Grid Voltage 0 -8.5 volts

Amplification Factor 19.5 17

Plate Resistance (Approx.) 6250 7700 ohms

Transconductance 3100 2200 μmhos

Plate Current 11.8 10.5 ma ←

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias operation 0.25 max. megohm

For cathode-bias operation 1.0 max. megohm

^o With no external shield.[■] See next page.

← Indicates a change.

NOV. 5, 1954

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1

6C4



6C4

MEDIUM-MU TRIODE

→ Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART No. 10
at front of this Section.

RF POWER AMPLIFIER & OSCILLATOR—Class C Telegraphy

Maximum Ratings, Design-Center Values:

DC PLATE VOLTAGE	300 max.	volts
DC GRID VOLTAGE	-50 max.	volts
DC PLATE CURRENT	25 max.	ma
DC GRID CURRENT	8 max.	ma
PLATE DISSIPATION	5 max.	watts

→ PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [■] max.	volts

Typical Operation at Frequencies up to 50 Mc:*

DC Plate Voltage	300	volts
DC Grid Voltage	-27	volts
DC Plate Current	25	ma
DC Grid Current (Approx.)	7	ma
Driving Power (Approx.)	0.35	watt
Useful Power Output (Approx.)	5.5	watts

■ The dc component must not exceed 100 volts.

* Approximately 2.5 watts can be obtained when the 6C4 is used at 150 Mc as an oscillator with grid resistor of 10000 ohms and maximum rated input.

→ indicates a change.

NOV. 5, 1954

TUBE DIVISION

DATA 1

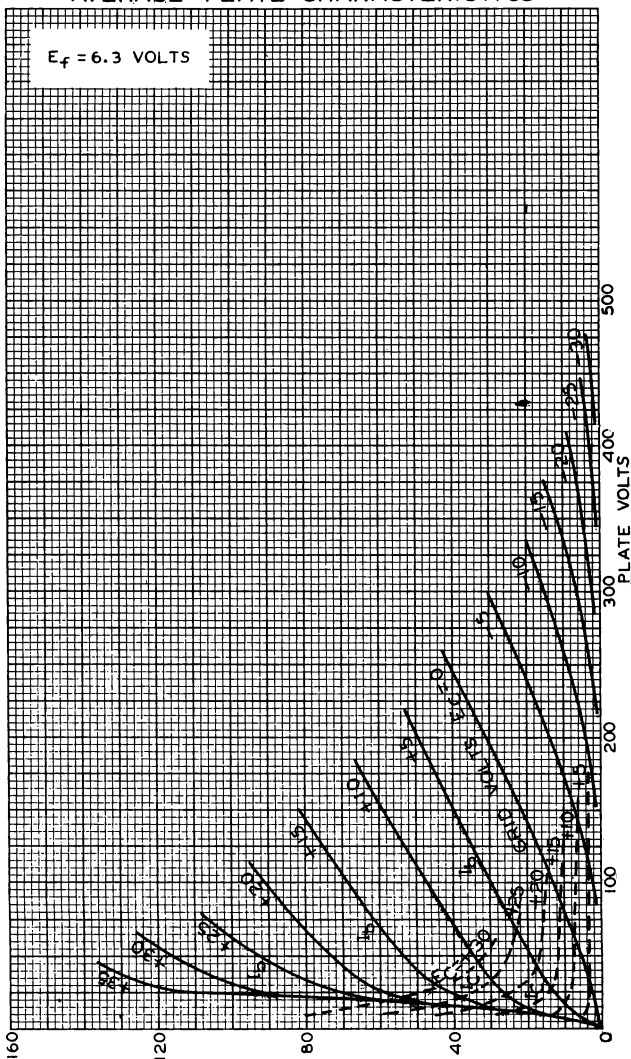
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6C4

6C4

AVERAGE PLATE CHARACTERISTICS



MARCH 16, 1942

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

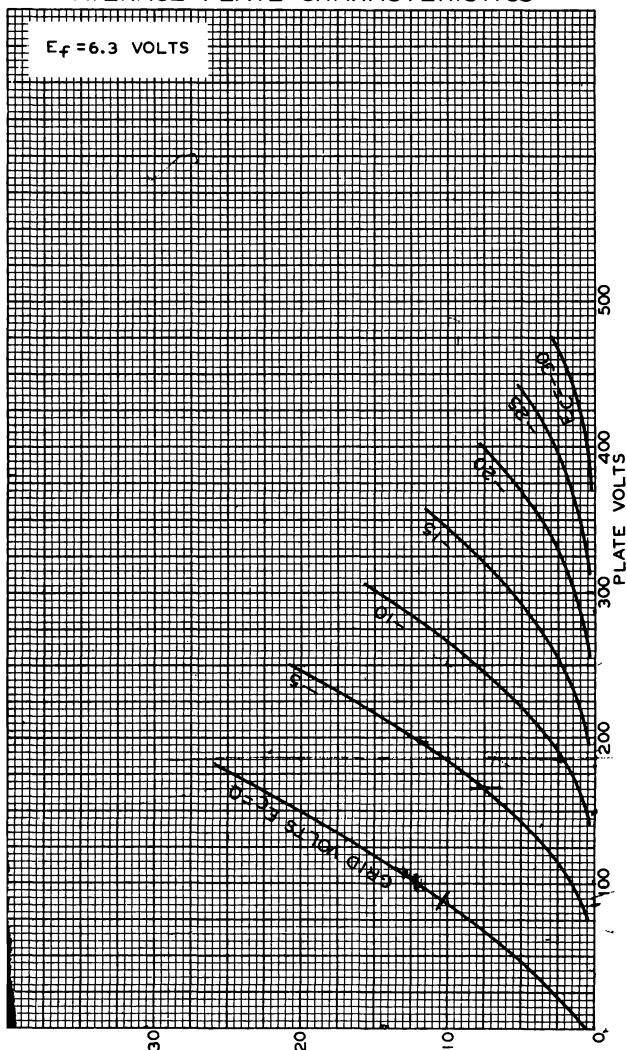
92C-6378

6C4



6C4

AVERAGE PLATE CHARACTERISTICS



ARCH 14, 1942

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6377



6C5, 6C5-GT/G

6C5
6C5-GT/G

DETECTOR AMPLIFIER TRIODE

Heater	Coated Unipotential Cathode		
Voltage	6.3	a-c or d-c volts	
Current	0.3	amp.	
	6C5	6C5-GT/G	
Direct Interelectrode Cap.	▲	▲▲	
Grid to Plate	2.0	2.2	μf
Grid to Cathode	3.0	4.4	μf
Plate to Cathode	11	12	μf
Maximum Overall Length	2-5/8"	3-5/16"	
Maximum Seated Height	2-1/16"	2-3/4"	
Maximum Diameter	1-5/16"	1-5/16"	
Bulb	Metal Shell, MT-8		
		T-9	
Base	{ Small Wafer Octal 6-Pin { Small Wafer Octal 6-Pin, Sleeve GT-60		
Basing Designation	6Q		
Pin 1	{ 6C5, Shell		
Pin 2	{ 6C5-GT/G, Sleeve		
Pin 3	{ Heater		
Pin 4	{ Plate		
Pin 5	{ Grid		
Pin 6	{ Cathode		
Pin 7	{ Heater		
Pin 8	{ Cathode		
Mounting Position	Any		



BOTTOM VIEW

Maximum And Minimum Ratings Are Design-Center Values

AMPLIFIER

Plate Voltage	300 max.	volts
Grid Voltage	0 min.	volts
Plate Dissipation	2.5 max.	watts
Characteristics - Class A₁ Amplifier:		
Plate Voltage	250	volts
Grid Voltage *	-8	volts
Amplification Factor	20	
Plate Resistance	10000	ohms
Transconductance	2000	μmhos
Plate Current	8	ma.

Typical Operation with Resistance Coupling:

See RESISTANCE-COUPLED AMPLIFIER CHART.

DETECTOR

Typical Operation:	Biased	Grid Leak	
Plate Voltage	250	45 to 100	volts
Grid Voltage	-17 approx.	Return to cathode	volts
Plate Current	Adjusted to 0.2 ma. with no input signal	-	
Grid Leak	-	0.1 to 1.0	megohm
Grid Condenser	-	0.00005 to 0.0005	μf

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ with shell of 6C5 connected to cathode. Values are approximate.

▲▲ with external shield connected to cathode. Values are approximate.

* Under maximum rated conditions, the resistance in the grid circuit should not exceed 1.0 megohm.

Mar. 20, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

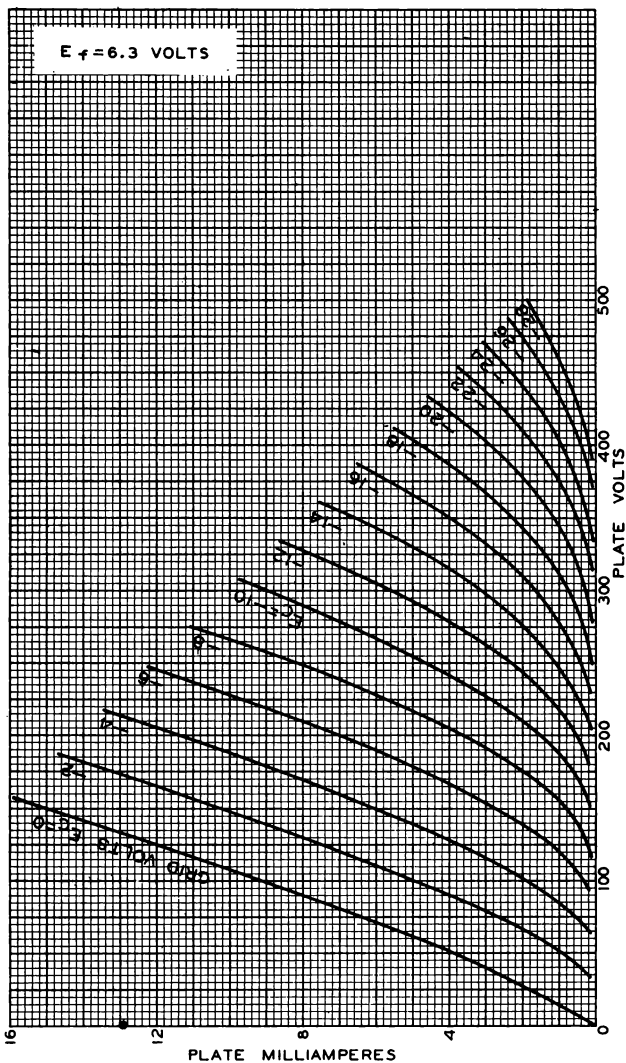
DATA

6C5



6C5

AVERAGE PLATE CHARACTERISTICS

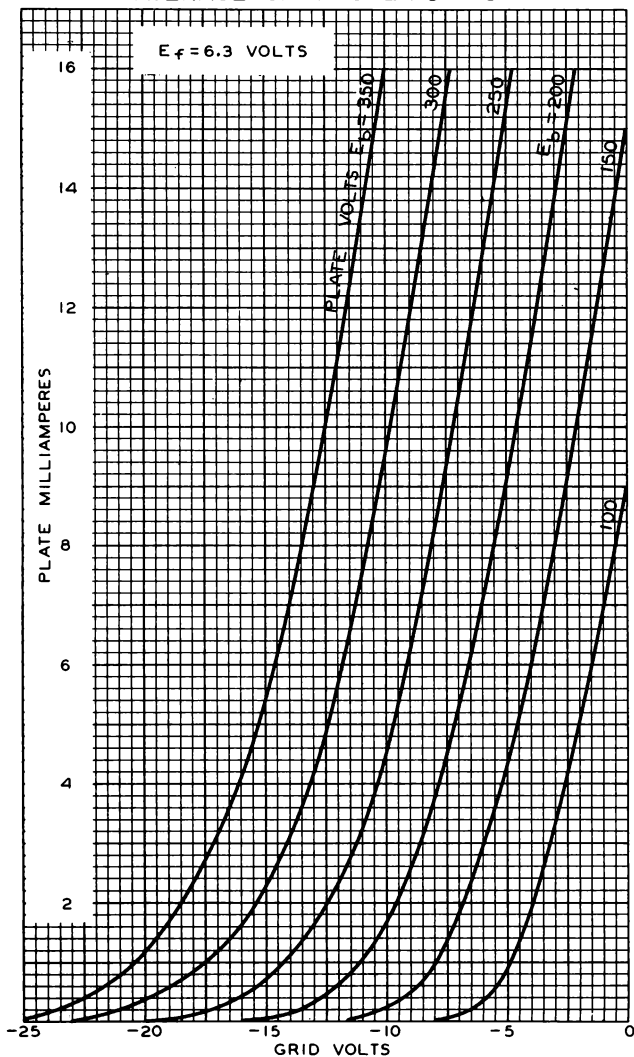


JULY 23, 1935

RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

92C-4441

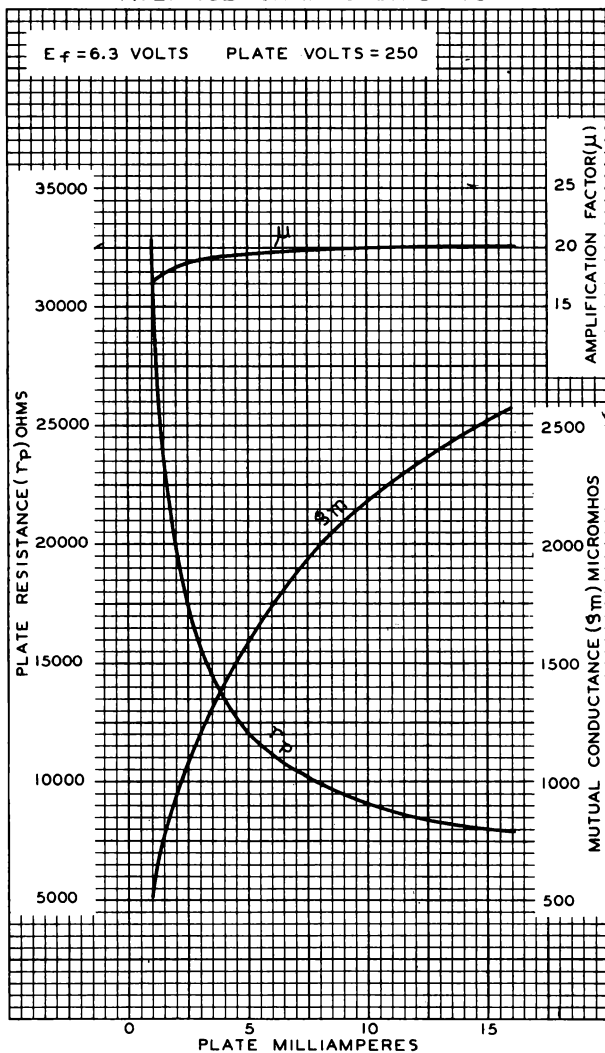
AVERAGE CHARACTERISTICS



6C5



AVERAGE CHARACTERISTICS



AUG. 23, 1935

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4462



6C6

SHARP-CUTOFF PENTODE

6C6

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances:

Pentode Connection:

Grid No.1 to Plate^o. 0.007 max. $\mu\mu\text{f}$ Input^{oo}. 5 $\mu\mu\text{f}$ Output^{oo}. 6.5 $\mu\mu\text{f}$ Triode Connection*^{oo}:Grid No.1 to Plate 2 $\mu\mu\text{f}$ Grid No.1 to Cathode 3 $\mu\mu\text{f}$ Plate to Cathode 10.5 $\mu\mu\text{f}$ ^o With external shield connected to cathode.^{oo} With no external shield.

* With grid No.2 and grid No.3 connected to plate.

Mechanical:

Mounting Position. Any

Maximum Overall Length 4-15/16"

Seated Length. 4-3/16" $\pm$ 1/8"

Maximum Diameter 1-9/16"

Bulb ST-12

Cap. Small

Base Small-Shell Small 6-Pin

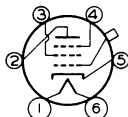
Basing Designation for BOTTOM VIEW 6F

Pin 1- Heater

Pin 2- Plate

Pin 3- Grid No.2

Pin 4- Grid No.3



Pin 5- Cathode,

Internal
Shield

Pin 6- Heater

Cap - Grid No.1

*Maximum Ratings, Characteristics, and Typical Operating
Conditions are the same as for Type 6J7.*

*Curves for Type 6C6 are the same
as those for Type 6J7.*

*For additional data, see RESISTANCE-COUPLED AMPLIFIER
CHARTS at the front of this Section.*

JUNE 15, 1948

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



6C7

6C7

DUPLEX-DIODE TRIODE

RENEWAL TYPE FOR MAJESTIC RECEIVERS

Heater ■	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Overall Length		4-9/32" to 4-17/32"
Seated Height		3-21/32" to 3-29/32"
Maximum Diameter (without shield)		1-9/16"
Bulb (with form-fitting shield)		ST-12
Cap		Small Metal
Base ▲		Small 7-Pin
Pin 1-Heater		Pin 5-Diode Plate #1
Pin 2-Plate		Pin 6-Cathode
Pin 3-External Shield		Pin 7-Heater
Pin 4-Diode Plate #2		



BOTTOM VIEW (7G)

TRIODE UNITCharacteristics:

Plate Voltage	250	volts
Grid Voltage	-9	volts
Amp. Factor	20	
Plate Res.	16000	ohms
Transcond.	1250	μmhos
Plate Cur.	4.5	ma.

DIODE UNITS - Two

Consideration of these units is given under Type 85. Circuits will be similar to those shown for Type 55 with fixed bias.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- ▲ Requires a different socket than the medium 7-pin base.

July 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



6C8-G

6C8-G



TWIN-TRIODE AMPLIFIER

Heater	Coated Unipotential Cathodes	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances (Approx.):		
	<u>Triode Unit T_1</u>	<u>Triode Unit T_2</u>
Grid to Plate	2.6	1.8 μf
Grid to Cathode	2.6	1.3 μf
Plate to Cathode	2.0	2.2 μf
Grid to Grid	0.1	μf
Plate to Plate	2.0	μf
Overall Length	4-7/32" to 4-15/32"	
Seated Height	3-21/32" to 3-29/32"	
Maximum Diameter	1-9/16"	
Bulb	ST-12	
Cap	Skirted Miniature, Style A	
Base	Small Shell Octal 8-Pin	
Pin 1 - No Connection		Pin 6 - Plate (Triode T_1)
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate (Triode T_2)		Pin 8 - Cathode (Triode T_1)
Pin 4 - Cathode (Triode T_2)		Cap - Grid (Triode T_2)
Pin 5 - Grid (Triode T_1)		
Mounting Position	BOTTOM VIEW (G-8G)	Any
<u>EACH TRIODE UNIT</u>		
Plate Voltage	250 max. volts	
Grid Voltage	0 min. volts	
Plate Dissipation	1.0 max. watt	
<i>Characteristics - Class A_1 Amplifier:</i>		
Plate	250	volts
Grid	-4.5	volts
Amp. Fact.	36	
Plate Res.	22500	ohms
Transcond.	1600	μmhos
Plate Cur.	3.2	ma.
<i>Typical Operation - Resistance-Coupled Amplifier:</i>		
See RESISTANCE-COUPLED AMPLIFIER CHART.		
■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.		

← Indicates a change.

Dec. 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

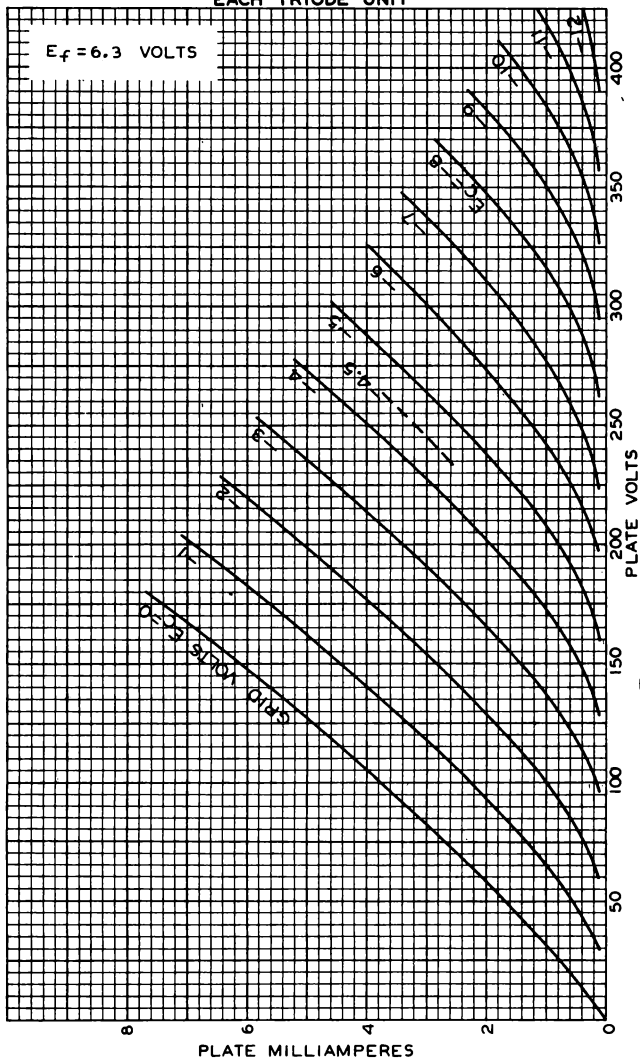
DATA

6C8-G



6C8-G

AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT



SEPT. 18, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4957R1



6CB5

BEAM POWER TUBE

6CB5

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 2.5 amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate 0.8 μ f

Grid No.1 to cathode & grid No.3,
grid No.2, and heater. 24 μ f

Plate to cathode & grid No.3,
grid No.2, and heater. 10 μ f

Characteristics, Class A₁ Amplifier:

Plate Voltage. 75 175 volts

Grid-No.2 (Screen) Voltage 150 175 volts

Grid-No.1 (Control-Grid) Voltage 0 -30 volts

Mu-Factor, Grid No.2 to Grid No.1. - 3.8

Plate Resistance (Approx.) - 5000 ohms

Transconductance - 8800 μ hos

Plate Current. 460* 90 ma

Grid-No.2 Current. 42* 6 ma

Grid-No.1 Voltage (Approx.)
for plate current of 1 ma. - -60 volts

Mechanical:

Mounting Position. Any

Maximum Overall Length 5-1/8"

Seated Length. 4-7/16" $\pm$ 5/32"

Maximum Diameter 2-1/16"

Bulb ST-16

Cap. Small (JETEC No.C1-1)

Base Short Jumbo-Shell Octal 8-Pin with
External Barriers (JETEC No.B8-71)

Basing Designation for BOTTOM VIEW 8GD

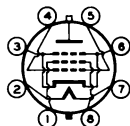
Pin 1 - Grid No.2

Pin 2 - Heater

Pin 3 - Cathode,
Grid No.3

Pin 4 - Grid No.1

Pin 5 - Grid No.1



Pin 6 - Cathode,
Grid No.3

Pin 7 - Heater

Pin 8 - Grid No.2

Cap - Plate

^o Without external shield.

* These values can be measured by a method involving a recurrent wave form such that the plate dissipation and grid-No.2 input will be kept within ratings in order to prevent damage to the tube.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6CB5



6CB5

BEAM POWER TUBE

HORIZONTAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	700	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute Value)*	6800 [●]	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500	max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	200	max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-50	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE	200	max.	volts
DC PLATE CURRENT	200	max.	ma
GRID-No.2 INPUT	3.6	max.	watts
PLATE DISSIPATION†	23	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200 [▲]	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface).	210	max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	0.47	max.	megohm
--	------	------	--------

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

* The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

[●] Under no circumstances should this absolute value be exceeded.

[▲] The dc component must not exceed 100 volts.

† It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value be employed.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

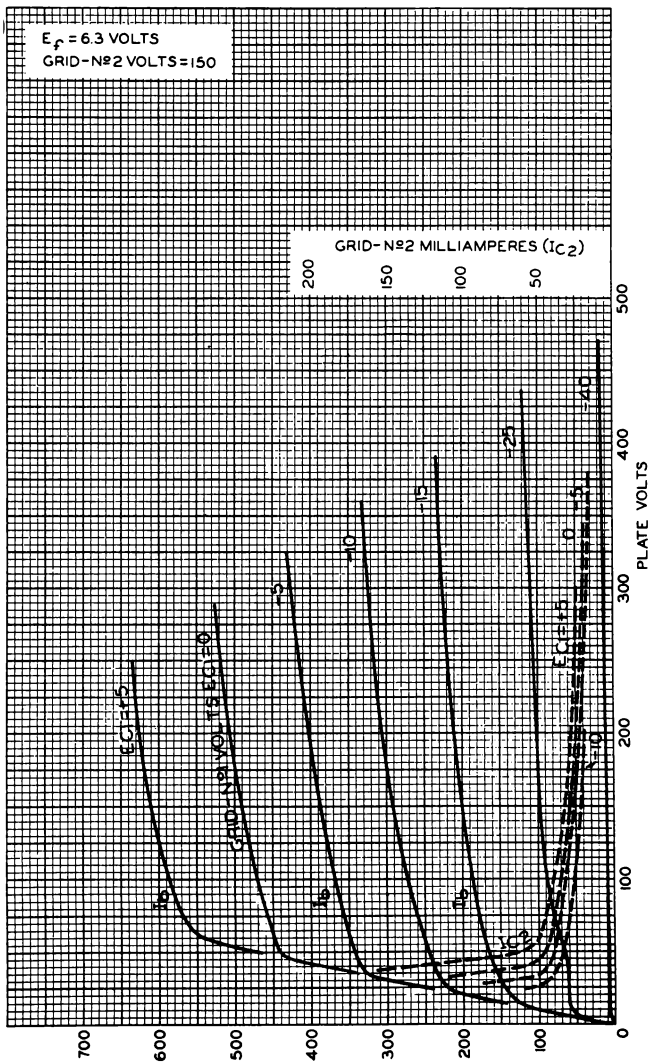
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6CB5

6CB5

AVERAGE PLATE CHARACTERISTICS



SEPT. 15, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

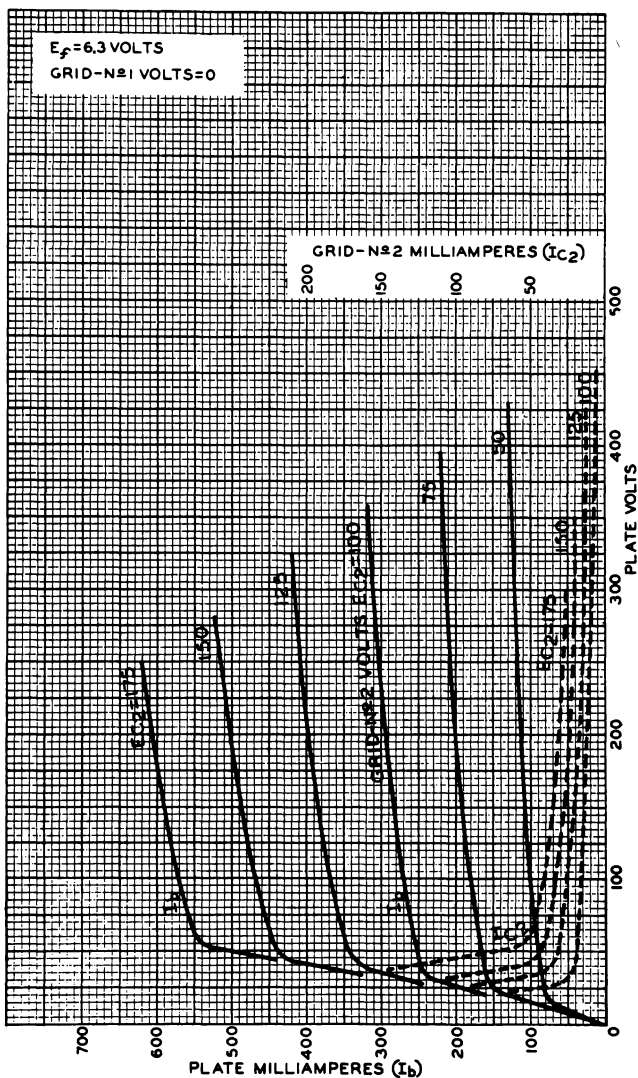
92CM-8436

6CB5



6CB5

AVERAGE PLATE CHARACTERISTICS



SEPT. 15, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8437



6CB6

6CB6

SHARP-CUTOFF PENTODE

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
Grid No.1 to plate	0.020 max.	0.010 max.	μf
Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater	6.5	6.5	μf
Plate to cathode, grid No.3 & internal shield, grid No.2, and heater	1.9	3.0	μf

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-1/8"

Maximum Seated Length. 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip). 1-1/2" $\pm$ 3/32"

Maximum Diameter 3-4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

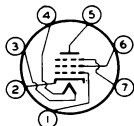
Basing Designation for BOTTOM VIEW 7CM

Pin 1 - Grid No.1

Pin 2 - Cathode

Pin 3 - Heater

Pin 4 - Heater



Pin 5 - Plate

Pin 6 - Grid No.2

Pin 7 - Grid No.3,
Internal
ShieldAMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRID-No.2 (SCREEN) SUPPLY VOLTAGE. 300 max. volts

GRID-No.2 VOLTAGE. See Grid-No.2 Input Rating Chart
at front of Receiving Tube Section

PLATE DISSIPATION. 2 max. watts

GRID-No.2 INPUT:

For grid-No.2 voltages up to 150 volts . . 0.5 max. watt

For grid-No.2 voltages between 150

and 300 volts. See Grid-No.2 Input Rating Chart
at front of Receiving Tube Section^o With external shield JETEC No.316 connected to cathode.

← Indicates a change.

MAR. 1, 1955

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6CB6



6CB6

SHARP-CUTOFF PENTODE

- PEAK HEATER-CATHODE VOLTAGE:
- | | | |
|---|-----------------------|-------|
| Heater negative with respect to cathode . | 200 max. | volts |
| Heater positive with respect to cathode . | 200 [▲] max. | volts |

Typical Operation and Characteristics:

Plate Voltage	200	volts
Grid No.3 (Suppressor).	<i>Connected to cathode at socket</i>	
Grid-No.2 Voltage	150	volts
Cathode-Bias Resistor	180	ohms
Plate Resistance (Approx.).	0.6	megohm
Transconductance.	6200	μ hos
Grid-No.1 Voltage (Approx.) for plate current of 10 μ amp.	-8	volts
Plate Current	9.5	ma
Grid-No.2 Current	2.8	ma

▲ The dc component must not exceed 100 volts.

→ Indicates a change.

MAR. 1, 1955

TUBE DIVISION

DATA

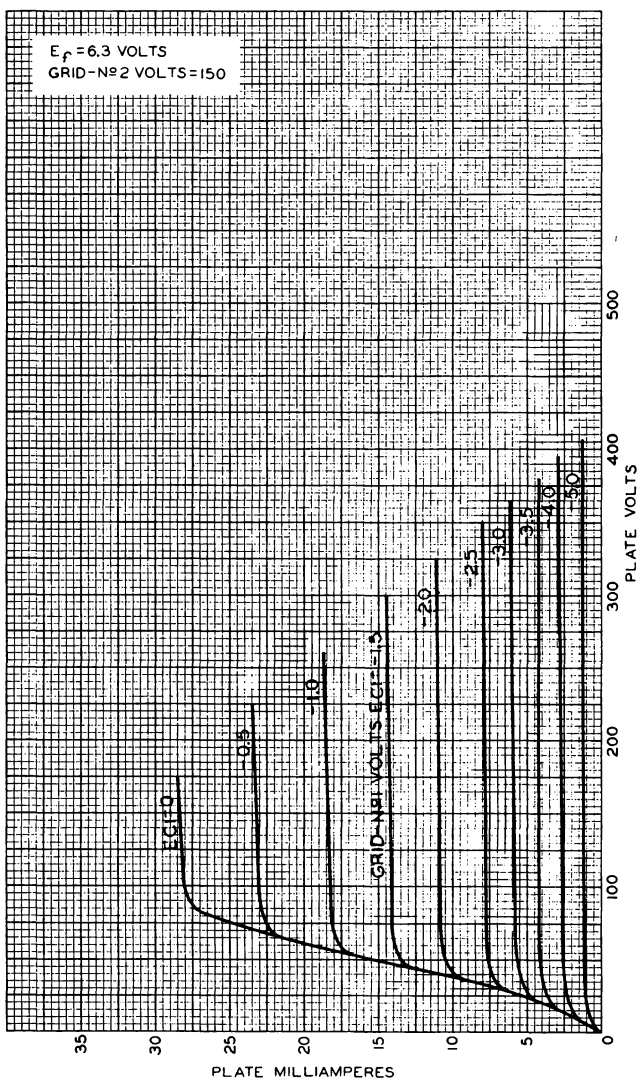
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6CB6

6CB6

AVERAGE PLATE CHARACTERISTICS



SEPT. 30, 1949

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

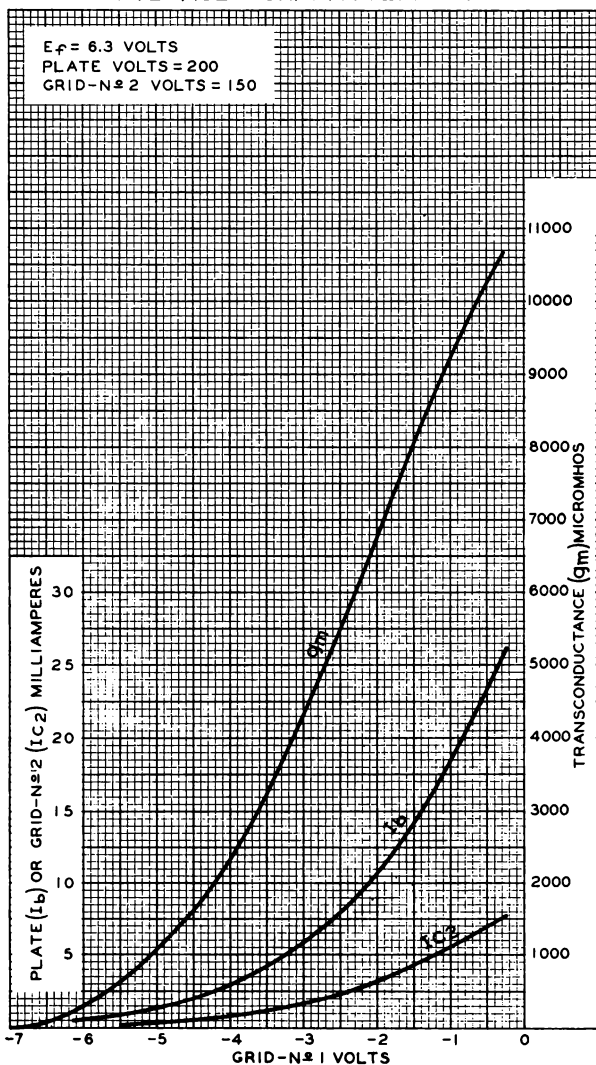
92CM-7378

6CB6



6CB6

AVERAGE CHARACTERISTICS



SEPT. 28, 1949

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7375



6CB6-A

6CB6-A

SHARP-CUTOFF PENTODE

7-PIN MINIATURE TYPE

*With heater having controlled warm-up time***GENERAL DATA****Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. $0.3 \pm 6\%$ amp

Warm-up time (Average) 11 sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances:

	<i>Without External Shield</i>	<i>With External Shield^o</i>	
Grid No.1 to plate.	0.025 max.	0.015 max.	μf
Grid No.1 to cathode & internal shield & grid No.3, grid No.2, and heater.	6.5	6.5	μf
Plate to cathode & internal shield & grid No.3, grid No.2, and heater.	2	3	μf

Characteristics, Class A₁ Amplifier:

Plate-Supply Voltage.	125	125	volts
Grid No.3	♦	♦	
Grid-No.2 Supply Voltage.	125	125	volts
Grid-No.1 Voltage	-3	-	volts
Cathode Resistor.	-	56	ohms
Plate Resistance (Approx.)	-	0.28	megohm
Transconductance.	-	8000	μhos
Plate Current	2.8	13	ma
Grid-No.2 Current	-	3.7	ma
Grid-No.1 Voltage (Approx.) for plate $\mu_a = 20$	-	-6.5	volts

Mechanical:

Operating Position.	Any
Maximum Overall Length.	2-1/8"
Maximum Seated Length	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip).	1-1/2" $\pm$ 3/32"
Diameter.	0.650" to 0.750"
Dimensional Outline	See General Section
Bulb.	.T5-1/2
Base.	Small-Button Miniature 7-Pin (JEDEC No.E7-1)

^o, ♦: See next page.

6CB6-A

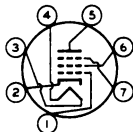


6CB6-A

SHARP-CUTOFF PENTODE

Basing Designation for Bottom View. 7CM

Pin 1—Grid No.1
 Pin 2—Cathode
 Pin 3—Heater
 Pin 4—Heater
 Pin 5—Plate



Pin 6—Grid No.2
 Pin 7—Grid No.3,
 Internal
 Shield

AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE	330 max.	volts
GRID-No.3 (SUPPRESSOR-GRID) VOLTAGE . .	0 max.	volts
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE.	330 max.	volts
GRID-No.2 VOLTAGE	<i>See Grid-No.2 Input</i>	

Rating Chart at front of Receiving Tube Section

GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive-bias value	0 max.	volts

GRID-No.2 INPUT:

For grid-No.2 voltages up to 165 volts.	0.55 max.	watt
---	-----------	------

For grid-No.2 voltages between 165 and 330 volts	<i>See Grid-No.2 Input</i>	
--	----------------------------	--

Rating Chart at front of Receiving Tube Section

PLATE DISSIPATION	2.3 max.	watts
-----------------------------	----------	-------

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 [▲] max.	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation.	0.25 max.	megohm
For cathode-bias operation.	1 max.	megohm

◊ With external shield JEDEC No.316 connected to cathode.

◆ Connected to cathode at socket.

▲ The dc component must not exceed 100 volts.

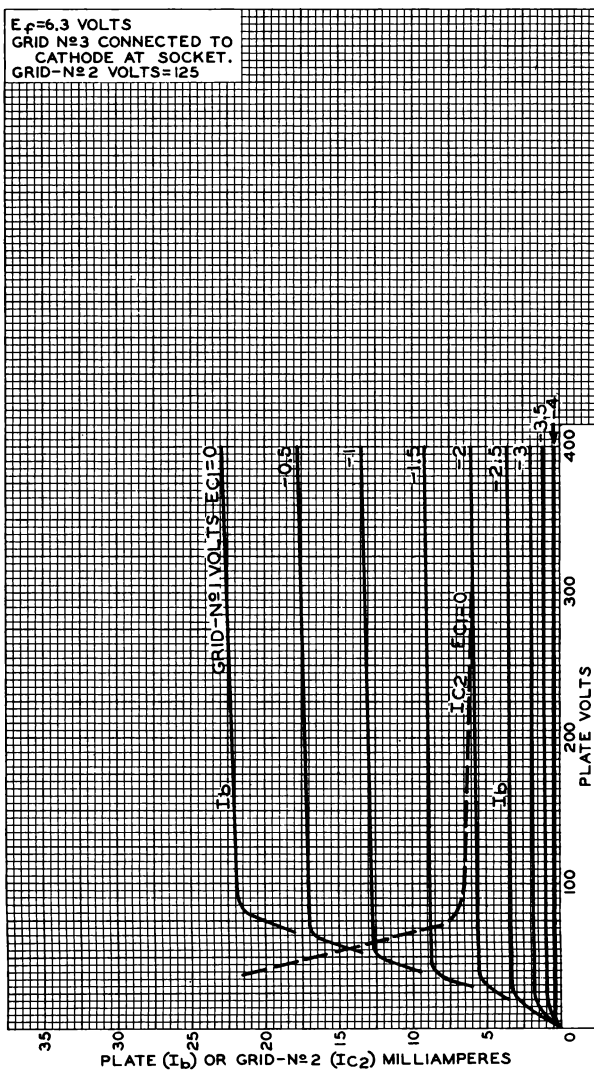


6CB6-A

6CB6-A

AVERAGE CHARACTERISTICS

$E_p = 6.3$ VOLTS
GRID No 3 CONNECTED TO
CATHODE AT SOCKET.
GRID-No 2 VOLTS = 125

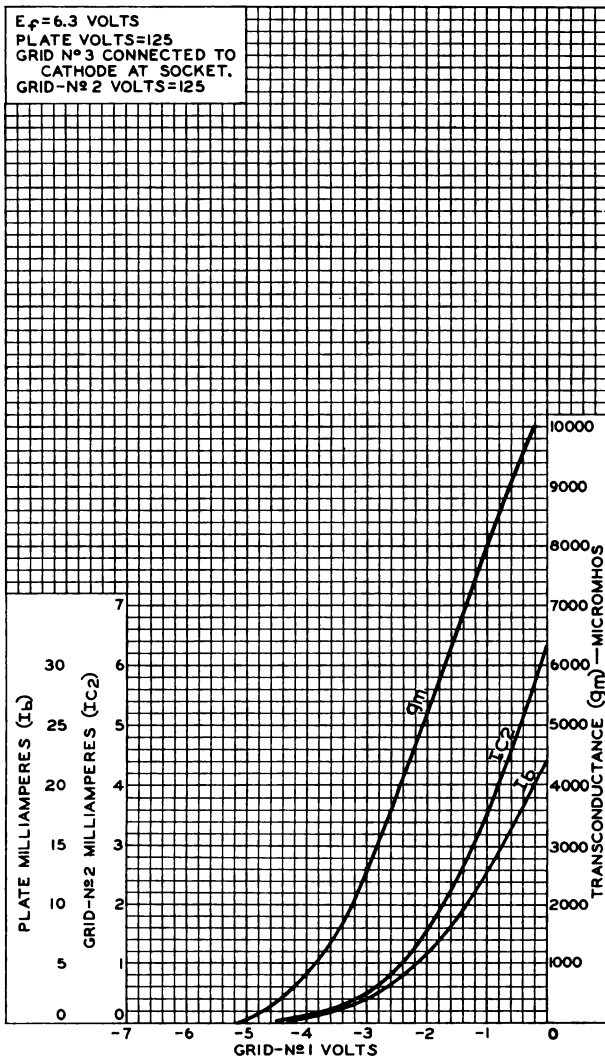


6CB6-A



6CB6-A

AVERAGE CHARACTERISTICS





6CD6-G

6CD6-G

BEAM POWER TUBE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 2.5 amp

Direct Interelectrode Capacitances (Approx.):^oGrid No.1 to plate 0.8 μ fGrid No.1 to cathode & grid No.3,
grid No.2, and heater. 24 μ fPlate to cathode & grid No.3,
grid No.2, and heater. 9.5 μ fCharacteristics, Class A₁ Amplifier:

Plate Voltage. 60 175 volts

Grid-No.2 (Screen) Voltage 100 175 volts

Grid-No.1 (Control-Grid) Voltage 0 -30 volts

Mu-Factor, Grid No.2 to Grid No.1 - 3.9

Plate Resistance (Approx.) - 7200 ohms

Transconductance - 7700 μ mhos

Plate Current. 230* 75 ma

Grid-No.2 Current. 21* 5.5 ma

Grid-No.1 Voltage (Approx.) for
plate current of 1 ma. - -55 volts

Mechanical:

Mounting Position. Vertical, base up or down, or
Horizontal with pins 2 and 7 in vertical plane

Maximum Overall Length. 5-11/16"

Seated Length. 4-31/32" $\pm$ 5/32"

Maximum Diameter 2-1/16"

Dimensional Outline. See General Section

Bulb ST-16

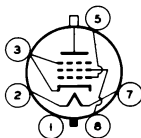
Cap. Small (JETEC No.C1-1)

Base Medium-Shell Octal 6-Pin (JETEC No.B6-13)

Basing Designation for BOTTOM VIEW 5BT

Pin 1 - No Con-
nection

Pin 2 - Heater

Pin 3 - Cathode,
Grid No.3

Pin 5 - Grid No.1

Pin 7 - Heater

Pin 8 - Grid No.2

Cap - Plate

^o Without external shield.

* These values can be measured by a method involving a recurrent wave form such that the cathode current will be kept within ratings in order to prevent damage to the tube.

← Indicates a change.

SEPT. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6CD6-G



6CD6-G

BEAM POWER TUBE

HORIZONTAL DEFLECTION AMPLIFIER

→ **Maximum Ratings, Design-Center Values Except as Noted:***For operation in a 525-line, 30-frame system[□]*

DC PLATE VOLTAGE	700	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum) [●]	6600 [■]	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500	max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	175	max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-50	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE	200	max.	volts
CATHODE CURRENT:			
Peak	700	max.	ma
Average	200	max.	ma
GRID-No.2 INPUT	3	max.	watts
PLATE DISSIPATION†	15	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200	max.	volts
Heater positive with respect to cathode	200 [▲]	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface).	210	max.	°C

→ **Maximum Circuit Values:**

Grid-No.1-Circuit Resistance:

For grid-resistor-bias operation† 0.47 max. megohm

□ As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

■ Under no circumstances should this absolute value be exceeded.

● The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

† It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.

▲ The dc component must not exceed 100 volts.

→ Indicates a change.

SEPT. 1, 1955

TUBE DIVISION

DATA

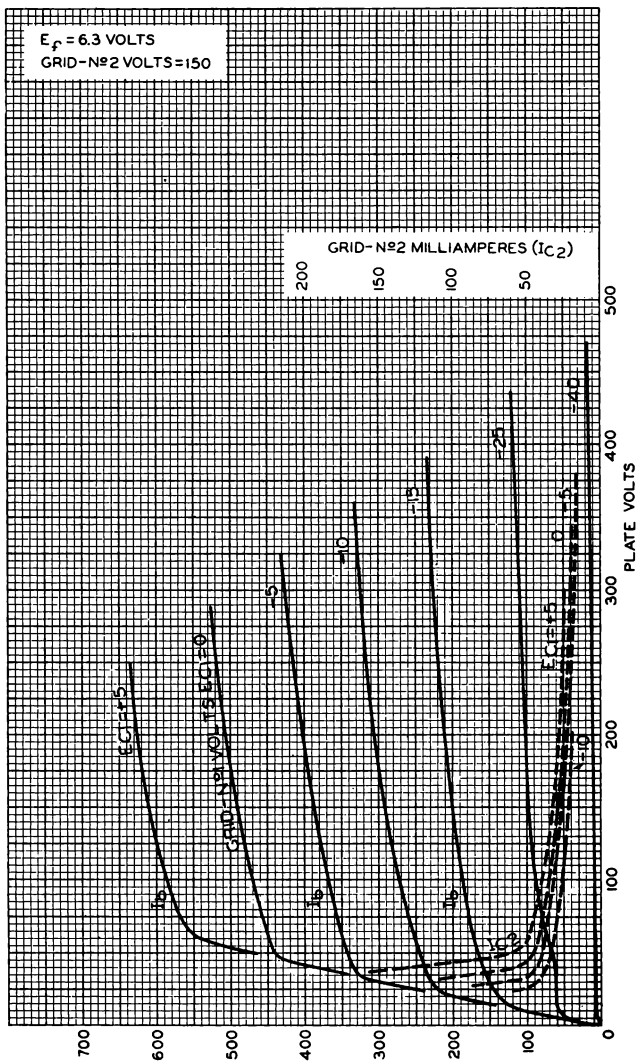
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6CD6-G

6CD6-G

AVERAGE PLATE CHARACTERISTICS



OCT. 26, 1949

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

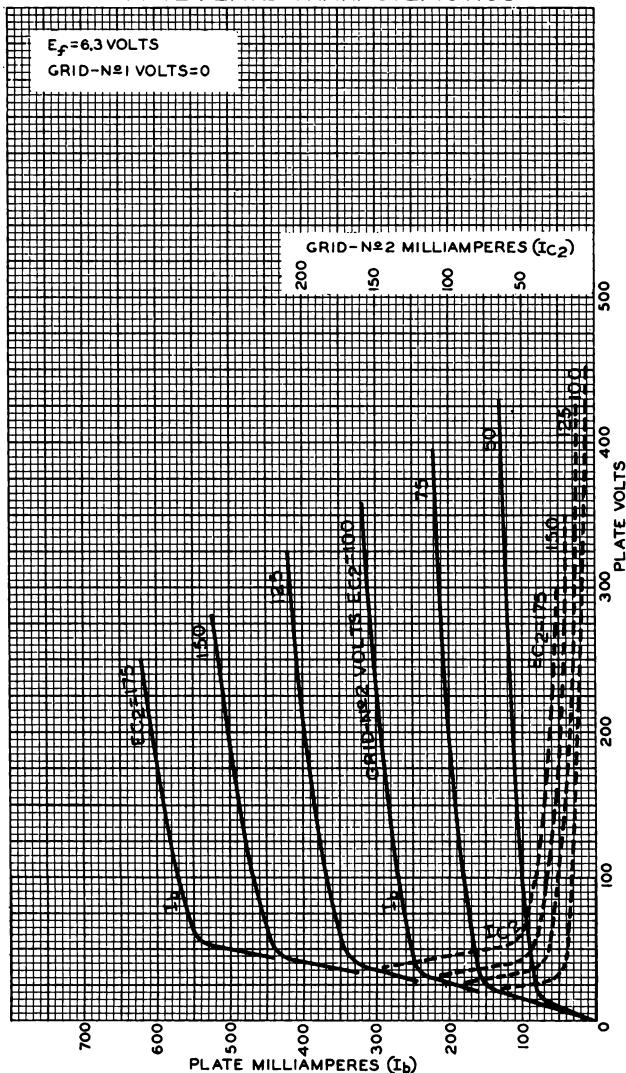
92CM-7393

6CD6-G



6CD6-G

AVERAGE PLATE CHARACTERISTICS





6CD6-GA

6CD6-GA BEAM POWER TUBE

Supersedes Type 6CD6-G

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 2.5 amp

Direct Interelectrode Capacitances (Approx.):^oGrid No.1 to plate. 1.1 μf Grid No.1 to cathode & grid No.3,
grid No.2, and heater 22 μf Plate to cathode & grid No.3,
grid No.2, and heater 8.5 μf

Characteristics, Class A₁ Amplifier:

Plate Voltage 60 175 volts

Grid-No.2 (Screen-Grid) Voltage . . . 100 175 volts

Grid-No.1 (Control-Grid) Voltage. . . 0 -30 volts

Mu-Factor, Grid No.2 to Grid No.1 . . - 3.9

Plate Resistance (Approx.). - 7200 ohms

Transconductance. - 7700 μmhos

Plate Current 230* 75 ma

Grid-No.2 Current 21* 5.5 ma

Grid-No.1 Voltage (Approx.) for
plate current of 1 ma - -55 volts

Mechanical:

Mounting Position Vertical, base up or down, or
Horizontal with pins 2 and 7 in vertical plane

Maximum Overall Length. 5"

Seated Length 4-1/4" $\pm$ 3/16"

Maximum Diameter. 1-9/16"

Bulb. T-12

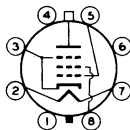
Cap Small (JETEC No.C1-1)

Base. Short Medium-Shell Octal 8-Pin
with External Barriers, Style A (JETEC No.B8-110),or Short Medium-Shell Octal 8-Pin
with External Barriers, Style B (JETEC No.B8-118)

Basing Designation for BOTTOM VIEW. 5BT

Pin 1 - No Connec-
tion

Pin 2 - Heater

Pin 3 - Cathode,
Grid No.3Pin 4 - No Connec-
tion

Pin 5 - Grid No.1

Pin 6 - No Connec-
tion

Pin 7 - Heater

Pin 8 - Grid No.2

Cap - Plate

^o Without external shield.

* These values can be measured by a method involving a recurrent wave form such that the cathode current will be kept within ratings in order to prevent damage to the tube.



BEAM POWER TUBE

HORIZONTAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:*For operation in a 525-line, 30-frame system*[□]

DC PLATE VOLTAGE	700	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum) [⊗]	7000 [■]	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500	max.	volts
DC GRID-No.2 (SCREEN-GRID) VOLTAGE	175	max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-50	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE	200	max.	volts
CATHODE CURRENT:			
Peak	700	max.	ma
Average	200	max.	ma
GRID-No.2 INPUT	3	max.	watts
PLATE DISSIPATION†	20	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200	max.	volts
Heater positive with respect to cathode	200 [▲]	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)	225	max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For grid-resistor-bias operation† 0.47 max. megohm

□ As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

■ Under no circumstances should this absolute value be exceeded.

⊗ The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

† It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.

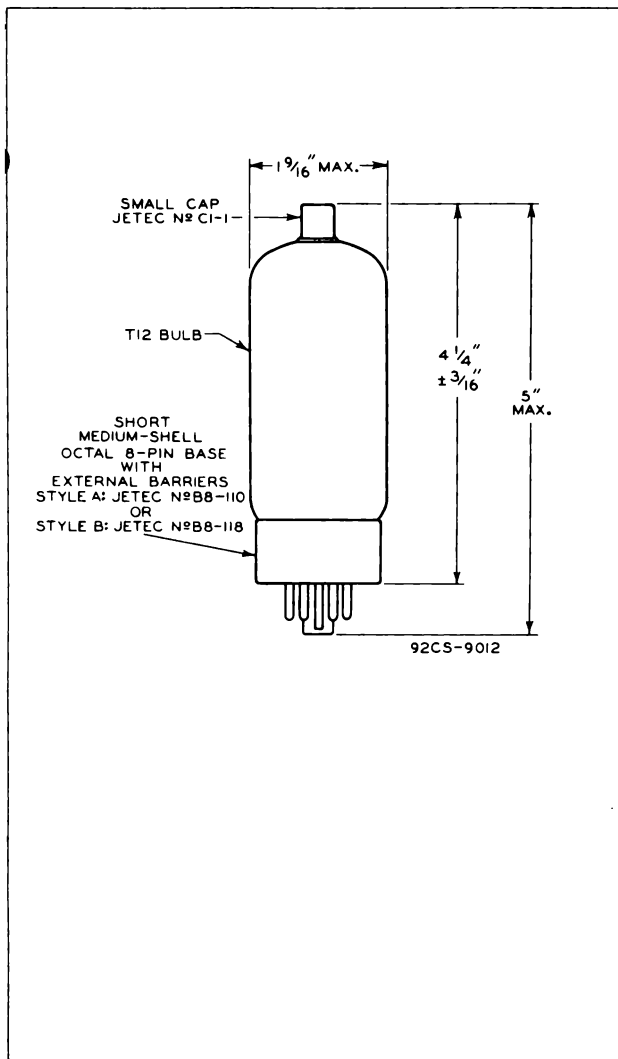
▲ The dc component must not exceed 100 volts.



6CD6-GA

BEAM POWER TUBE

6CD6-GA

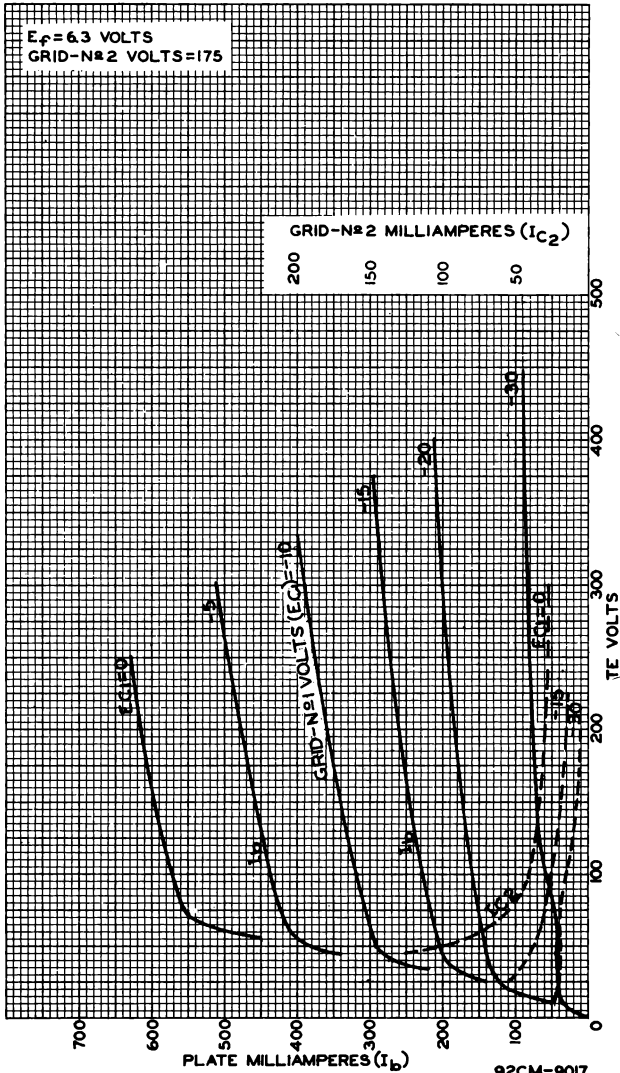


6CD6-GA



6CD6-GA

AVERAGE CHARACTERISTICS



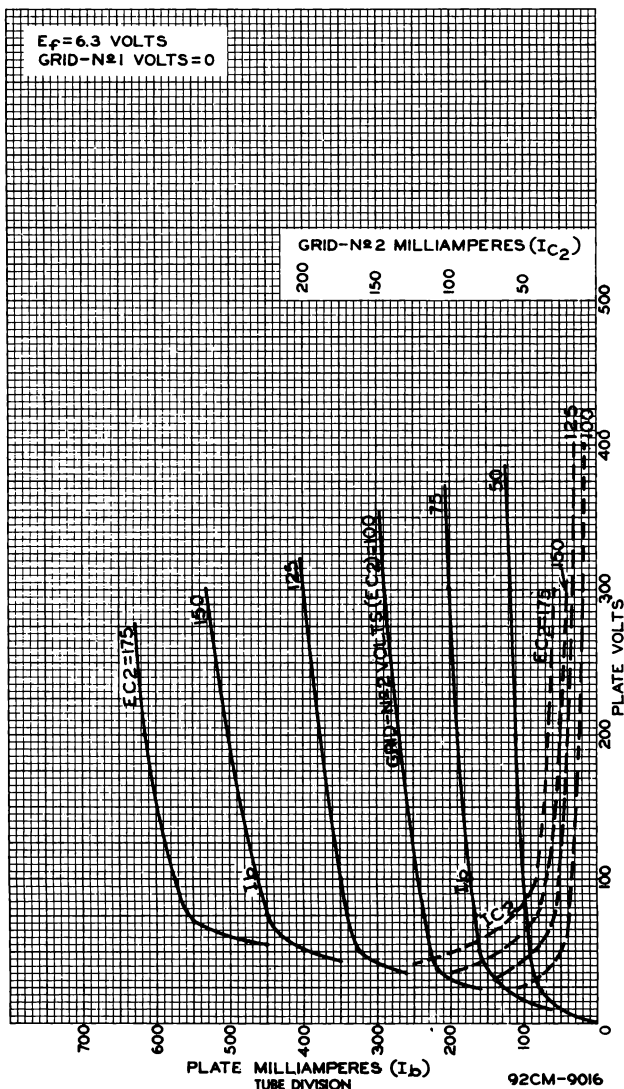
92CM-9017



6CD6-GA

AVERAGE CHARACTERISTICS

6CD6-GA



**6CF6****SHARP-CUTOFF PENTODE**

MINIATURE TYPE

*For use in gain-controlled video tf stages operating
at frequencies in the order of 40 megacycles*

6CF6**GENERAL DATA****Electrical:**

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances:^oGrid No.1 to Plate . . 0.020 max. μf Input 6.3 μf Output 1.9 μf ^o With no external shield.**Mechanical:**

Mounting Position Any

Maximum Overall Length 2-1/8"

Maximum Seated Length 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip) . . 1-1/2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

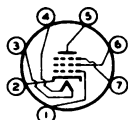
Basing Designation for BOTTOM VIEW 7CM

Pin 1-Grid No.1

Pin 2-Cathode

Pin 3-Heater

Pin 4-Heater



Pin 5-Plate

Pin 6-Grid No.2

Pin 7-Grid No.3,
Internal
Shield**AMPLIFIER - Class A₁****Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 150 max. volts

PLATE DISSIPATION 2.0 max. watts

GRID-No.2 INPUT 0.5 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . . 90 max. volts

Heater positive with respect to cathode . . 90 max. volts

Typical Operation and Characteristics:

Plate Voltage 200 volts

Grid No.3 (Suppressor) . . . Connected to cathode at socket

Grid-No.2 Voltage 150 volts

Cathode-Bias Resistor 180 ohms

Plate Resistance (Approx.) 0.6 megohm

Transconductance 6200 μmhos

Grid-No.1 Bias (Approx.) for

plate current of 35 μamp -6.5 volts

AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6CF6



6CF6

SHARP-CUTOFF PENTODE

Plate Current	9.5	ma
Grid-No.2 Current	2.8	ma

*Curves shown under Type 6CB6
also apply to the 6CF6*

AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

**6CG7****6CG7****MEDIUM-MU TWIN TRIODE**

9-PIN MINIATURE TYPE

*Intended for use in equipment with
series heater-string arrangement***GENERAL DATA****Electrical:**

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts

Current 0.6 amp

Warm-up time (Average) 11 sec

Heater warm-up time is defined as the time required in the accompanying test circuit for the voltage (E) across the heater terminals to increase from zero to 5 volts.

Direct Interelectrode Capacitances (Approx.):⁰

	Unit No. 1	Unit No. 2	
Grid to plate	4	4	μf
Grid to cathode, heater, and internal shield	2.3	2.3	μf
Plate to cathode, heater, and internal shield	2.2	2.2	μf

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage	90	250	volts
Grid Voltage	0	-8	volts
Amplification Factor	20	20	
Plate Resistance (Approx.)	6700	7700	ohms
Transconductance	3000	2600	μmhos
Plate Current	10	9	ma
Plate Current for grid voltage of -12.5 volts	-	1.3	ma
Grid Voltage (Approx.) for plate current of 10 μamp	-7	-18	volts

Mechanical:

Mounting Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip) 2" $\pm$ 3/32"

Maximum Diameter 7/8"

Bulb T-6-1/2

Base Small-Button Noval 9-Pin (JETEC No. E9-1)

Basing Designation for BOTTOM VIEW 9AJ

Pin 1-Plate of
Unit No. 2Pin 2-Grid of
Unit No. 2Pin 3-Cathode of
Unit No. 2Pin 4-Heater
Pin 5-HeaterPin 6-Plate of
Unit No. 1Pin 7-Grid of
Unit No. 1Pin 8-Cathode of
Unit No. 1Pin 9-Internal
Shield⁰ without external shield.

JAN. 3, 1955

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6CG7



6CG7

MEDIUM-MU TWIN TRIODE

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID VOLTAGE:		
Positive bias value	0 max.	volts
CATHODE CURRENT	20 max.	ma
PLATE DISSIPATION:		
Either plate	3.5 max.	watts
Both plates (Both units operating)	5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:		
For fixed-bias operation	1 max.	megohm

Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART No. 29
at front of this Section

HORIZONTAL DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	300 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE [▲]	600 max.	volts
CATHODE CURRENT:		
Peak	300 max.	ma
Average	20 max.	ma
PLATE DISSIPATION:		
Either plate	3.5 max.	watts
Both plates (Both units operating)	5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:		
For fixed-bias, grid-resistor bias, or cathode-bias operation	2.2 max.	megohms

[▲] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

[▲], [□]: See next page.

JAN. 3, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA 1



6CG7

6CG7

MEDIUM-MU TWIN TRIODE

VERTICAL DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE 300 max. volts

PEAK NEGATIVE-PULSE GRID VOLTAGE[#]. 400 max. volts

CATHODE CURRENT:

Peak 70 max. ma

Average 20 max. ma

PLATE DISSIPATION:

Either plate 3.5 max. watts

Both plates (Both units operating) 5 max. watts

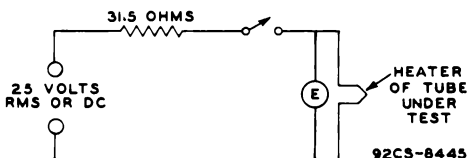
PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 200 max. volts

Heater positive with respect to cathode. 200[▲]max. volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias, grid-resistor bias, or
cathode-bias operation 2.2 max. megohms[▲] The dc component must not exceed 100 volts.[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.[#] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.TEST CIRCUIT FOR DETERMINING
HEATER WARM-UP TIME

JAN. 3, 1955

TUBE DIVISION

TENTATIVE DATA 2

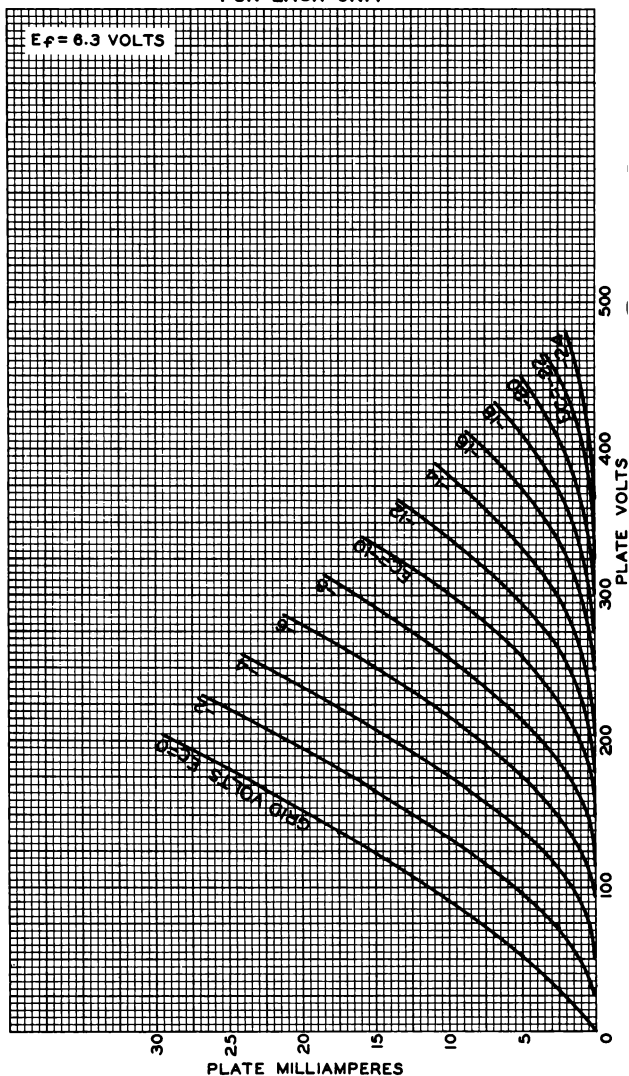
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6CG7



6CG7

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



SEPT. 27, 1954

TUBE DIVISION

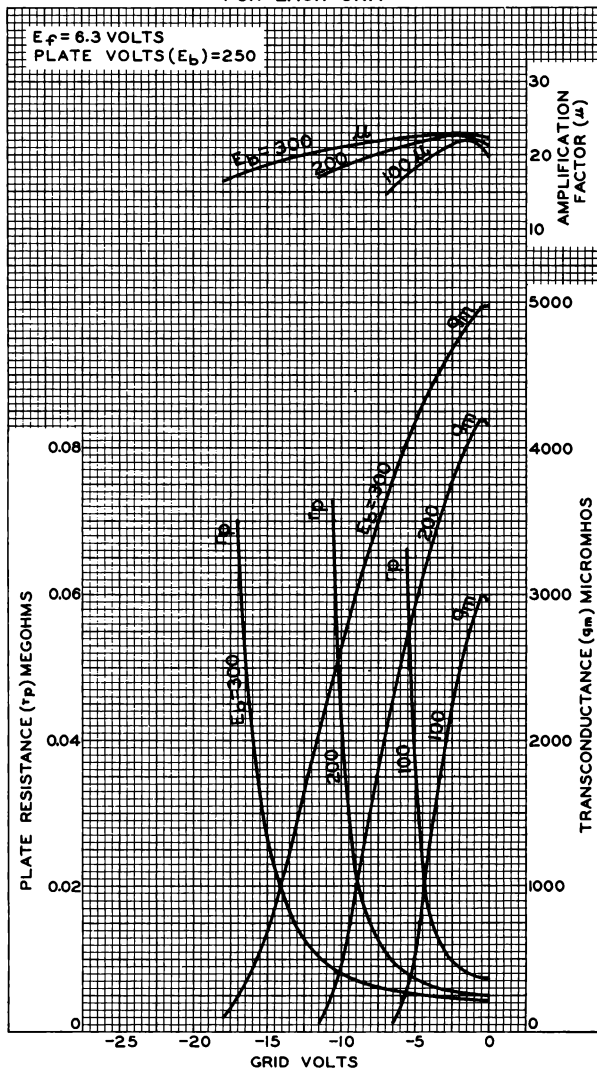
92CM-8442

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6CG7

6CG7

AVERAGE CHARACTERISTICS
FOR EACH UNIT

SEPT. 27, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8441



6CL6

6CL6

POWER PENTODE

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.65 amp

Direct Interelectrode Capacitances (without external shield):

Grid No.1 to Plate . . . 0.120 μf Input 11 μf Output 5.5 μf Characteristics, Amplifier Class A₁:

Plate Voltage 250 volts

Grid No.3 Connected to cathode at socket

Grid-No.2 Voltage 150 volts

Grid-No.1 Voltage -3 volts

Peak AF Grid-No.1 Signal Voltage 3 volts

Zero-Signal DC Plate Current 30 ma

Max.-Signal DC Plate Current 31 ma

Zero-Signal DC Grid-No.2 Current 7 ma

Max.-Signal DC Grid-No.2 Current 7.2 ma

Plate Resistance (Approx.) 0.15 megohm

Transconductance 11000 μhos Grid-No.1 Voltage (Approx.) for
plate current of 10 μamp -14 volts

Load Resistance 7500 ohms

Total Harmonic Distortion 8 per cent

Max.-Signal Power Output 2.8 watts

Mechanical:

Mounting Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-3/8"

Length, Base Seat to Bulb Top (excluding tip) 2" $\pm 3/32$ "

Maximum Diameter 7/8"

Bulb T-6-1/2

Base Small-Button Noval 9-Pin (JEDEC No. E9-1)

BOTTOM VIEW

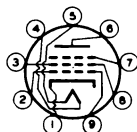
Pin 1 - Cathode

Pin 2 - Grid No.1

Pin 3 - Grid No.2

Pin 4 - Heater

Pin 5 - Heater



Pin 6 - Plate

Pin 7 - Grid No.3,
Int. Shield

Pin 8 - Grid No.2

Pin 9 - Grid No.1

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

PLATE SUPPLY VOLTAGE 300 max. volts

GRID-No.3 (SUPPRESSOR) VOLTAGE 0 max. volts

SEPT. 1, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6CL6



6CL6

POWER PENTODE

GRID-No.2 (SCREEN) VOLTAGE	See Rating Curve at front of this Section
GRID-No.2 SUPPLY VOLTAGE	300 max. volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:	
Negative bias value	50 max. volts
Positive bias value	0 max. volts
PLATE DISSIPATION	7.5 max. watts
GRID-No.2 INPUT	1.7 max. watts
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode .	90 max. volts
Heater positive with respect to cathode .	90 max. volts
BULB TEMPERATURE (At hottest point on bulb surface)	200 max. °C

Typical Operation in 4-Mc Bandwidth Video Amplifier

Circuit of Fig. 1:

Plate Supply Voltage	300	volts
Grid No.3	Connected to cathode at socket	
Grid-No.2 Supply Voltage	300	volts
Grid-No.1 Bias Voltage	-2	volts
Grid-No.1 Signal Voltage (Peak to Peak) .	3	volts
Grid-No.2 Resistor	24000	ohms
Grid-No.1 Resistor	0.1	megohm
Load Resistor	3900	ohms
Zero-Signal Plate Current	30	ma
Zero-Signal Grid-No.2 Current	7.0	ma
Voltage Output (Peak to Peak)	132	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:	
For fixed-bias operation	0.1 max. megohm
For cathode-bias operation	0.5 max. megohm

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TENTATIVE DATA

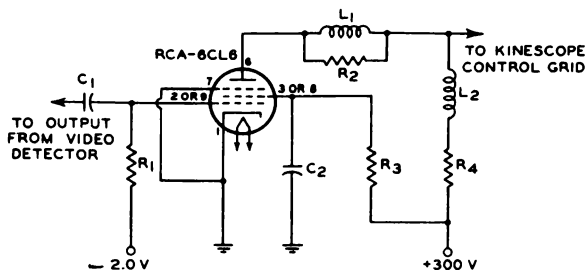
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6CL6

POWER PENTODE

*Fig. 1 - Typical Video Voltage Amplifier Circuit
Having Bandwidth of 4 Mc.*



C1: 0.1 μ f, 400 volts

C2: 4 μ f, 400 volts

L1: Peaking Coil, 180 μ h

L2: Peaking Coil, 120 μ h

R1: 100000 ohms, 0.5 watt

R2: 47000 ohms, 0.5 watt

R3: 24000 ohms, 2 watts

R4: 3900 ohms, 5 watts

non-inductive type

Devices and arrangements shown or described herein may use patents of RCA or others. Information contained herein is furnished without responsibility by RCA for its use and without prejudice to RCA's patent rights.

SEPT. 1, 1952

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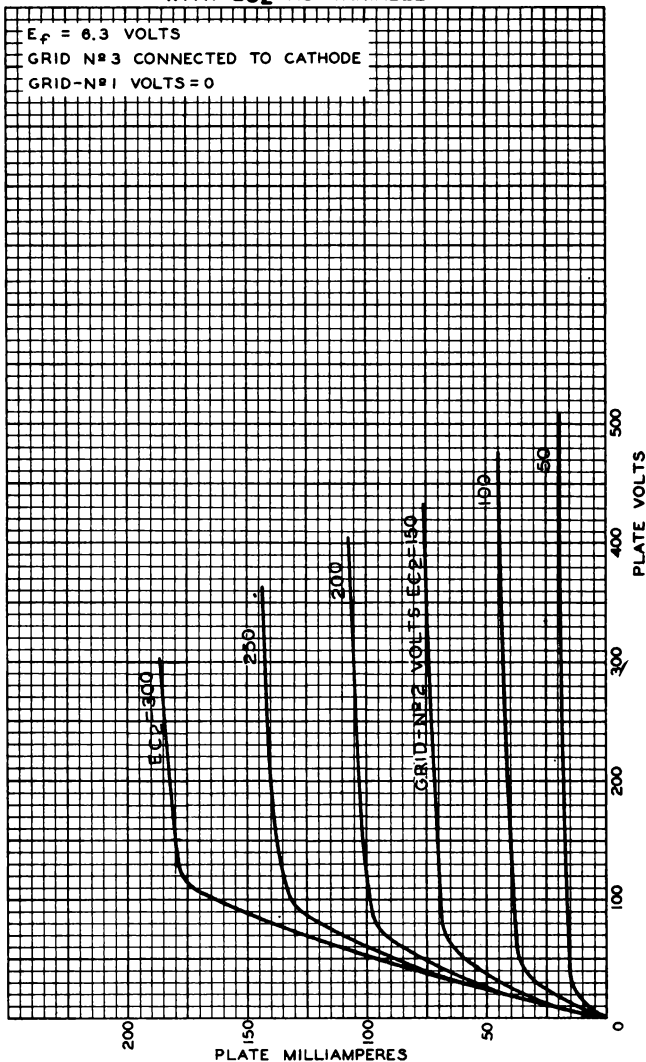
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6CL6



6CL6

AVERAGE PLATE CHARACTERISTICS
WITH EC_2 AS VARIABLE

MAY 22, 1952

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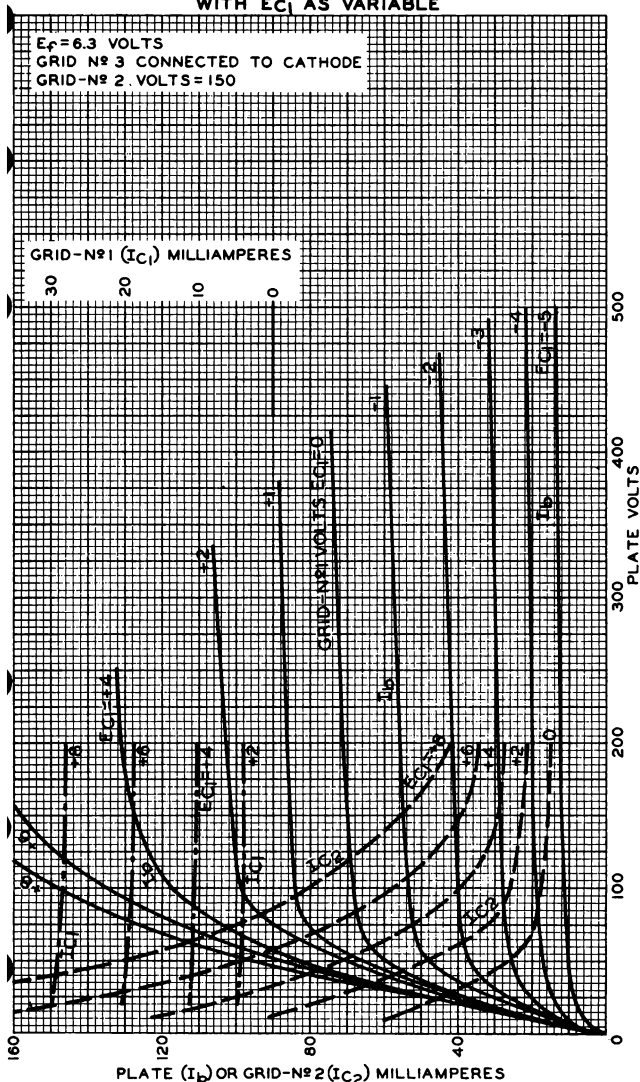
92CM-7803



6CL6

6CL6

AVERAGE PLATE CHARACTERISTICS WITH E_{C1} AS VARIABLE



MAY 22, 1952

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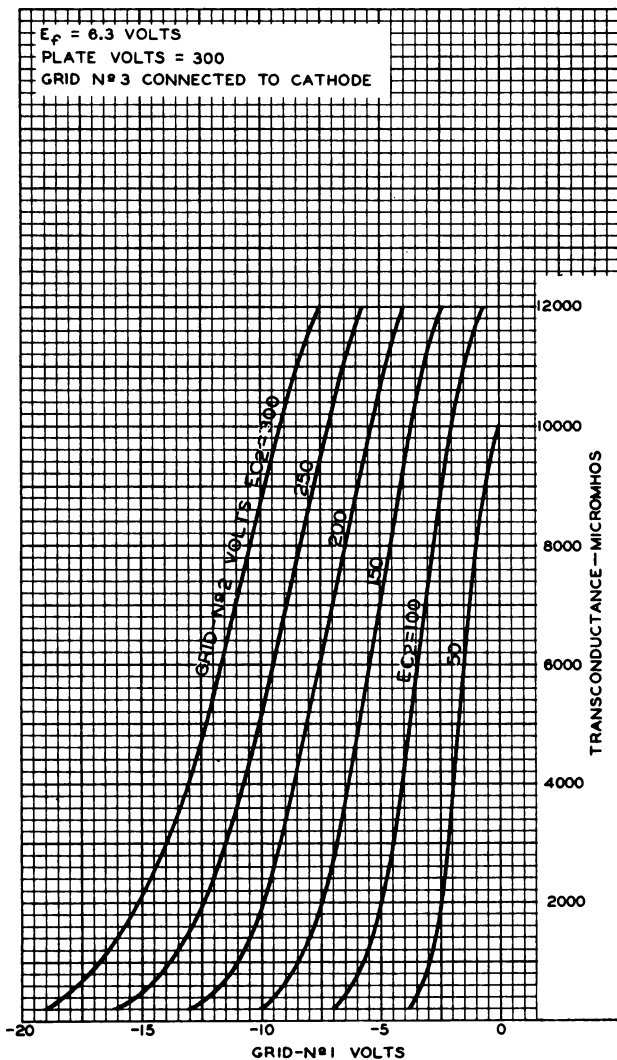
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6CL6



6CL6

AVERAGE CHARACTERISTICS



MAY 21, 1952

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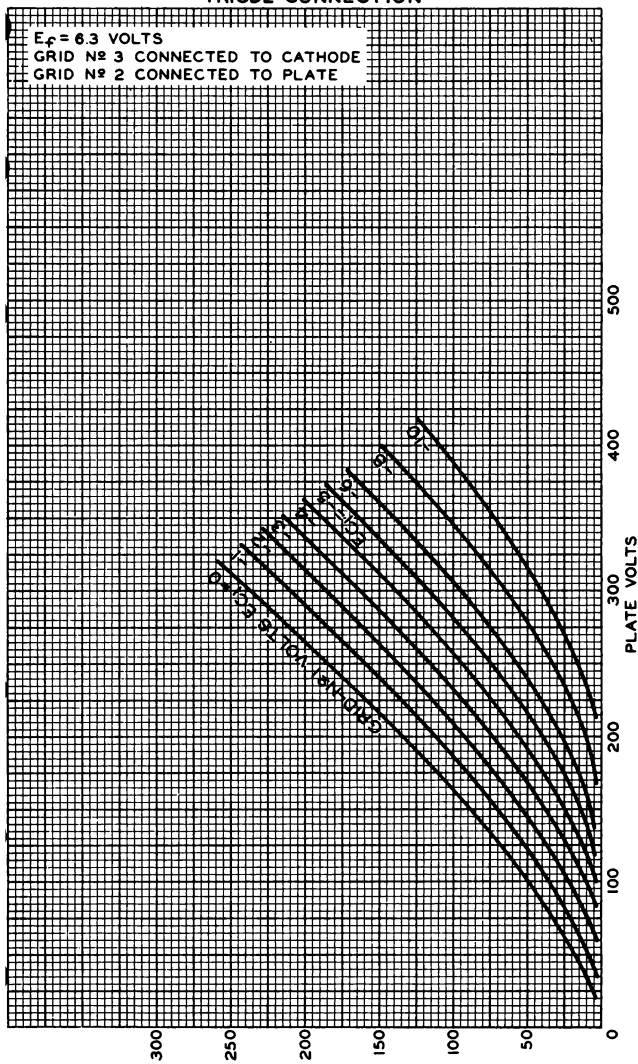
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6CL6

6CL6

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



MAY 26, 1952

PLATE MILLIAMPERES
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92CM-7808



6CL8-A

6CL8-A

MEDIUM-MU TRIODE— SHARP-CUTOFF TETRODE

9-PIN MINIATURE TYPE

*Intended for use as combined VHF oscillator
and mixer tube in TV receivers. This type
has a heater with controlled warm-up time.*

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	 ac or dc volts
Current	0.45	 amp
Warm-up time (Average).	11	 sec

*For definition of heater warm-up time and method of determining
it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of
this Section.*

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
Triode Unit:			
Grid to plate	1.8	1.8	$\mu\mu\text{f}$
Grid to cathode and heater	2.7	2.7	$\mu\mu\text{f}$
Plate to cathode and heater	0.4	1.2	$\mu\mu\text{f}$
Tetrode Unit:			
Grid No.1 to plate.	0.02 max.	0.01 max.	$\mu\mu\text{f}$
Grid No.1 to cathode, grid No.2, and heater	5	5	$\mu\mu\text{f}$
Plate to cathode, grid No.2, and heater	2.4	3.4	$\mu\mu\text{f}$
Heater to cathode (Each Unit)	2.5	2.5 [•]	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier:

	Triode Unit	Tetrode Unit		
Plate-Supply Voltage.	125	100	125	volts
Grid-No.2 (Screen-grid) Supply Voltage.	—	100	125	volts
Grid-No.1 (Control-grid) Voltage	—	0	-1	volt
Cathode Resistor.	56	—	—	ohms
Amplification Factor.	40	—	—	
Plate Resistance (Approx.).	5000	—	100000	ohms
Transconductance.	8000	8200	6400	μmhos
Plate Current	15	—	12	ma
Grid-No.2 Current	—	—	4	ma
Grid-No.1 Voltage (Approx.) for plate $\mu\text{a} = 10$	-9	—	-10	volts

^o, [•]: See next page.

6CL8-A



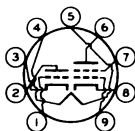
6CL8-A

MEDIUM-MU TRIODE— SHARP-CUTOFF TETRODE

Mechanical:

Operating Position. Any
 Maximum Overall Length. 2-3/16"
 Maximum Seated Length. 1-15/16"
 Length, Base Seat to Bulb Top (Excluding tip) . 1-9/16" $\pm$ 3/32"
 Diameter. 0.750" to 0.875"
 Dimensional Outline. See General Section
 Bulb. T6-1/2
 Base. Small-Button Noval 9-Pin (JEDEC No.E9-1)
 Basing Designation for BOTTOM VIEW. 9FX

Pin 1—Triode Grid
 Pin 2—Triode Plate
 Pin 3—Triode
 Cathode
 Pin 4—Heater
 Pin 5—Heater
 Pin 6—Tetrode Plate



Pin 7—Tetrode
 Grid No.2
 Pin 8—Tetrode
 Cathode
 Pin 9—Tetrode
 Grid No.1

CONVERTER SERVICE

Maximum Ratings, Design-Center Values:

	Triode Unit as Osc.	Tetrode Unit as Mixer	
PLATE VOLTAGE	300 max.	300 max.	volts
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE.	—	300 max.	volts
GRID-No.2 VOLTAGE	—	See Grid-No.2 Input	
Rating Chart at front of Receiving Tube Section			
GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Positive-bias value . . .	0 max.	0 max.	volts
GRID-No.2 INPUT:			
For grid-No.2 voltages up to 150 volts	—	0.5 max.	watt
For grid-No.2 voltages between 150 and 300 volts	—	See Grid-No.2 Input	
Rating Chart at front of Receiving Tube Section			
PLATE DISSIPATION	2.7 max.	2.8 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode. . .	200 max.	200 max.	volts
Heater positive with respect to cathode. . .	200 [▲] max.	200 [▲] max.	volts

[○], [●], [▲]: See next page.



6CL8-A

6CL8-A

MEDIUM-MU TRIODE— SHARP-CUTOFF TETRODE

Maximum Circuit Values:

	<i>Triode Unit</i>	<i>Tetrode Unit</i>	
Grid-No.1-Circuit Resistance:			
For fixed-bias operation. .	0.5 max.	0.25 max.	megohm
For cathode-bias operation.	1 max.	1 max.	megohm

- With external shield JEDEC No.315 connected to cathode of unit under test except as noted.
- With external shield JEDEC No.315 connected to ground.
- ▲ The dc component must not exceed 100 volts.



6CM7

6CM7

MEDIUM-MU DUAL TRIODE**With Dissimilar Units**

9-PIN MINIATURE TYPE

*Intended for use in equipment having
series heater-string arrangement***GENERAL DATA****Electrical:**

Heater, for Unipotential Cathodes:

Voltage.	6.3		ac or dc volts
Current.	0.6		amp
Warm-up time (Average)	11		sec

*For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.*Direct Interelectrode Capacitances (Approx.):^o

	Unit No. 1 Oscillator	Unit No. 2 Amplifier	
Grid to plate.	3.8	3	$\mu\mu\text{f}$
Grid to cathode and heater	2	3.5	$\mu\mu\text{f}$
Plate to cathode and heater	0.5	0.4	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier:

	Unit No. 1 Oscillator	Unit No. 2 Amplifier	
Plate Voltage.	200	250	volts
Grid Voltage	-7	-8	volts
Amplification Factor	20	18	
Plate Resistance (Approx.)	11000	4100	ohms
Transconductance	2000	4400	μmhos
Plate Current.	5	20	ma
Plate Current for grid voltage of -10 volts	1	-	ma
Grid Voltage (Approx.) for plate current of 10 microamperes.	-14	-	volts

Mechanical:

Mounting Position.	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length.	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip).	2" $\pm$ 3/32"
Maximum Diameter	7/8"
Dimensional Outline.	See General Section
Bulb	T-6-1/2

^o Without external shield.

JULY 1, 1955

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6CM7



6CM7

MEDIUM-MU DUAL TRIODE

With Dissimilar Units

Base Small-Button Noval 9-Pin (JETEC No. E9-1)
 Basing Designation for BOTTOM VIEW 9ES

Pin 1 - Plate of Unit No.2		Pin 6 - Plate of Unit No.1
Pin 2 - No Connection		Pin 7 - Grid of Unit No.1
Pin 3 - Cathode of Unit No.1		Pin 8 - Grid of Unit No.2
Pin 4 - Heater		Pin 9 - Cathode of Unit No.2
Pin 5 - Heater		

VERTICAL DEFLECTION OSCILLATOR

Values are for Unit No.1

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	500 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	200 max.	volts
CATHODE CURRENT:		
Peak	70 max.	ma
Average	15 max.	ma
PLATE DISSIPATION	1.25 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias, grid-resistor bias, or
 cathode-bias operation 2.2 max. megohms

VERTICAL DEFLECTION AMPLIFIER

Values are for Unit No.2

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	500 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE [#] (Absolute maximum)	2200 [■] max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	200 max.	volts
CATHODE CURRENT:		
Peak	70 max.	ma
Average	20 max.	ma
PLATE DISSIPATION	5.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 [▲] max.	volts

[▲] The dc component must not exceed 100 volts.

[□], [#], [■]: See next page.

JULY 1, 1955

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6CM7

6CM7

MEDIUM-MU DUAL TRIODE

With Dissimilar Units

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias operation 1.0 max. megohm
For cathode-bias operation 2.5 max. megohms

□ As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.

■ under no circumstances should this absolute value be exceeded.

JULY 1, 1955

TUBE DIVISION

TENTATIVE DATA 2

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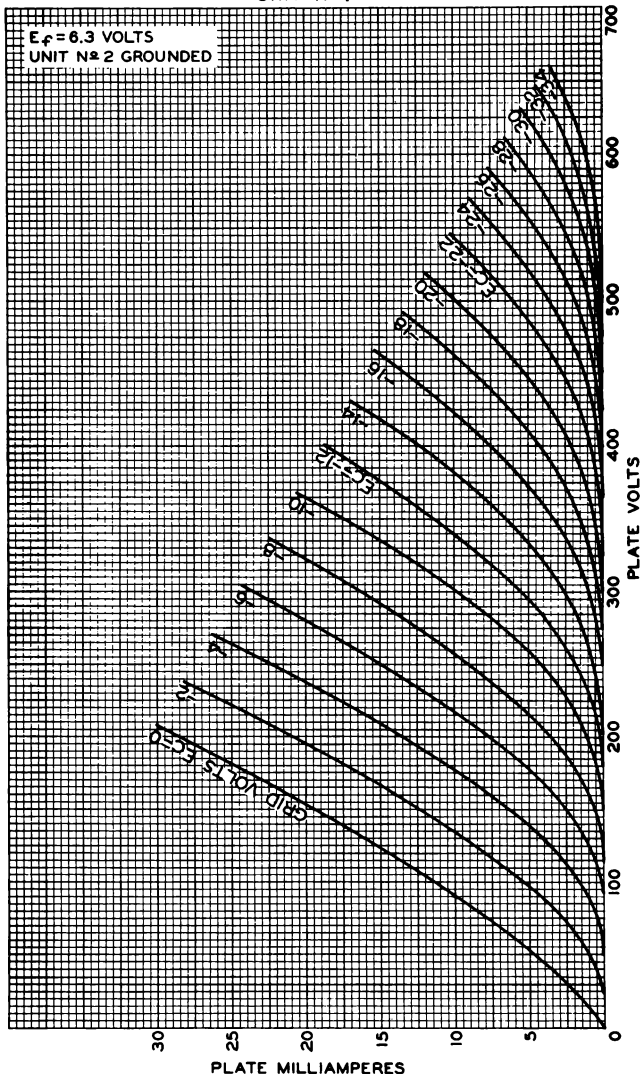
6CM7



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AVERAGE PLATE CHARACTERISTICS

UNIT N°1



MAY 17, 1955

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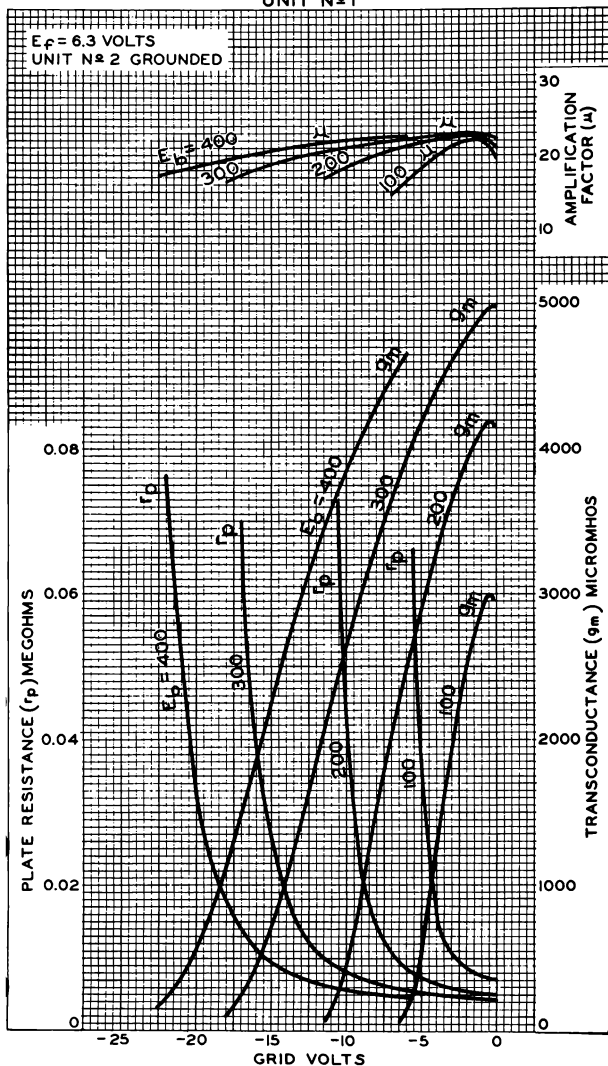
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AVERAGE CHARACTERISTICS
UNIT N^o 1

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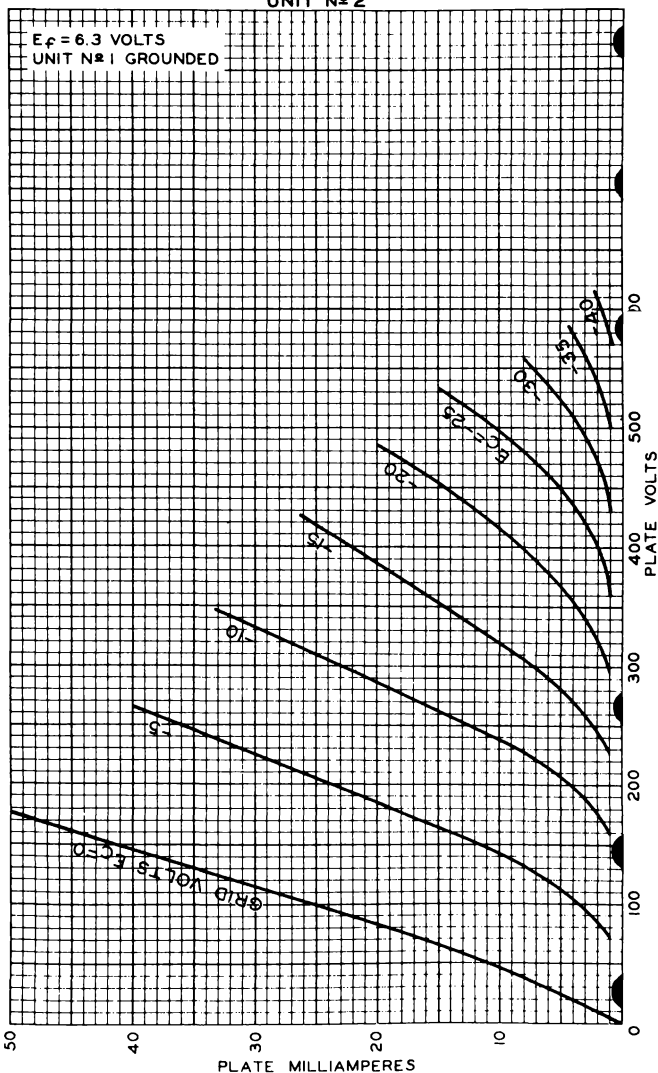
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6CM7



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AVERAGE PLATE CHARACTERISTICS

UNIT N^o 2

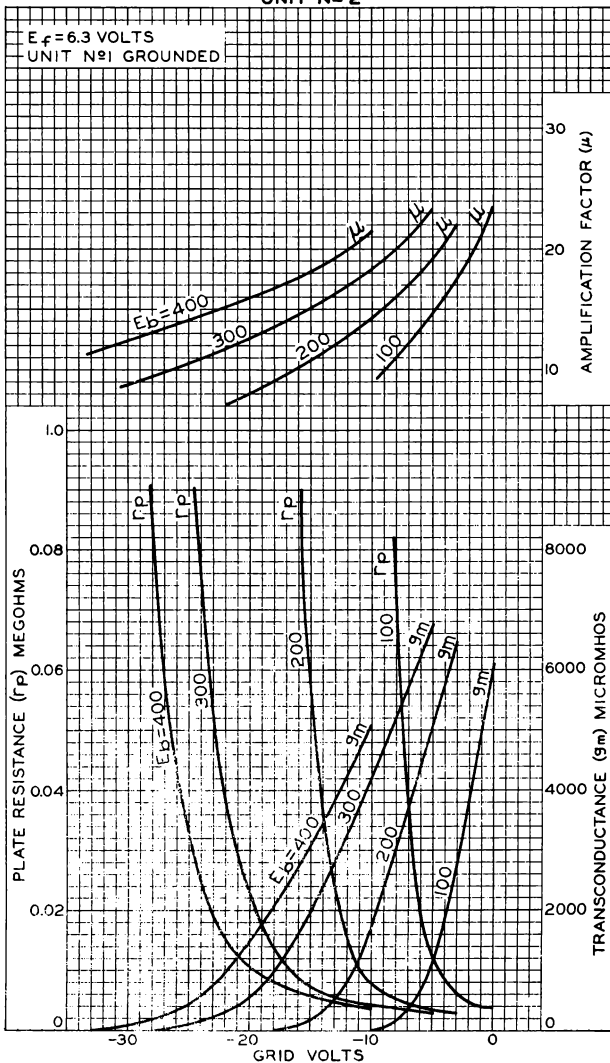
MAY 16, 1955

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92CM-8615



6CM7

AVERAGE CHARACTERISTICS
UNIT No 2

MAY 16, 1955

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92CM-8613



6CS6

PENTAGRID AMPLIFIER

7-PIN MINIATURE TYPE

6CS6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances (Approx.):⁰Grid No.1 to plate 0.05 max. $\mu\mu\text{f}$ Grid No.3 to plate 0.36 max. $\mu\mu\text{f}$ Grid No.1 to grid No.3 0.15 max. $\mu\mu\text{f}$ Grid No.1 to cathode & grid No.5,
grid No.4 & grid No.2, grid
No.3, and heater 5.5 $\mu\mu\text{f}$ Grid No.3 to cathode & grid No.5,
grid No.4 & grid No.2, grid
No.1, and heater 7 $\mu\mu\text{f}$ Plate to cathode & grid No.5,
grid No.4 & grid No.2, grid
No.3, grid No.1, and heater. 7.5 $\mu\mu\text{f}$ Characteristics, Class A₁ Amplifier:

Plate Voltage. 100 100 volts

Grid-No.2 & Grid-No.4 Voltage. 30 30 volts

Grid-No.3 Voltage. -1 0 volt

Grid-No.1 Voltage. 0 -1 volt

Plate Resistance (Approx.) 0.7 1 megohm

Grid-No.3-to-Plate Transconductance. 1250 - μmhos Grid-No.1-to-Plate Transconductance. - 950 μmhos

Plate Current. 0.8 0.75 ma

Grid-No.2 & Grid-No.4 Current. 4 1.1 ma

Grid-No.3 Voltage (Approx.) for
plate current of 50 μamp -2.2 - voltsGrid-No.1 Voltage (Approx.) for
plate current of 50 μamp - -2.5 volts

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-1/8"

Maximum Seated Length. 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip) 1-1/2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 7CH

Pin 1 - Grid No.1

Pin 2 - Cathode,
Grid No.5

Pin 3 - Heater

Pin 4 - Heater



Pin 5 - Plate

Pin 6 - Grid No.2,
Grid No.4

Pin 7 - Grid No.3

⁰ without external shield.

MAY 1, 1955

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6CS6



6CS6

PENTAGRID AMPLIFIER

GATED AMPLIFIER SERVICE

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID-No.2 & GRID-No.4 SUPPLY VOLTAGE . .	300 max.	volts
GRID-No.2 & GRID-No.4 VOLTAGE. . .	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>	

PLATE DISSIPATION.	1 max.	watt
----------------------------	--------	------

GRID-No.2 & GRID-No.4 INPUT:

For grid-No.2 & grid-No.4 voltages up to 150 volts.	1 max.	watt
For grid-No.2 & grid-No.4 voltages between 150 and 300 volts. . .	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>	

CATHODE CURRENT.	14 max.	ma
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PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . .	200 max.	volts
Heater positive with respect to cathode . .	200 [▲] max.	volts

Typical Operation as Sync Separator and Sync Clipper:

Plate Voltage.	10	volts
Grid-No.2 & Grid-No.4 Voltage.	30	volts
Grid-No.3 Voltage.	0	volts
Grid-No.1 Voltage.	0	volts
Plate Current.	1.2	ma
Grid-No.2 & Grid-No.4 Current.	4.1	ma

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	0.47 max.	megohm
Grid-No.3-Circuit Resistance	2.2 max.	megohms

[▲] The dc component must not exceed 100 volts.

MAY 1, 1955

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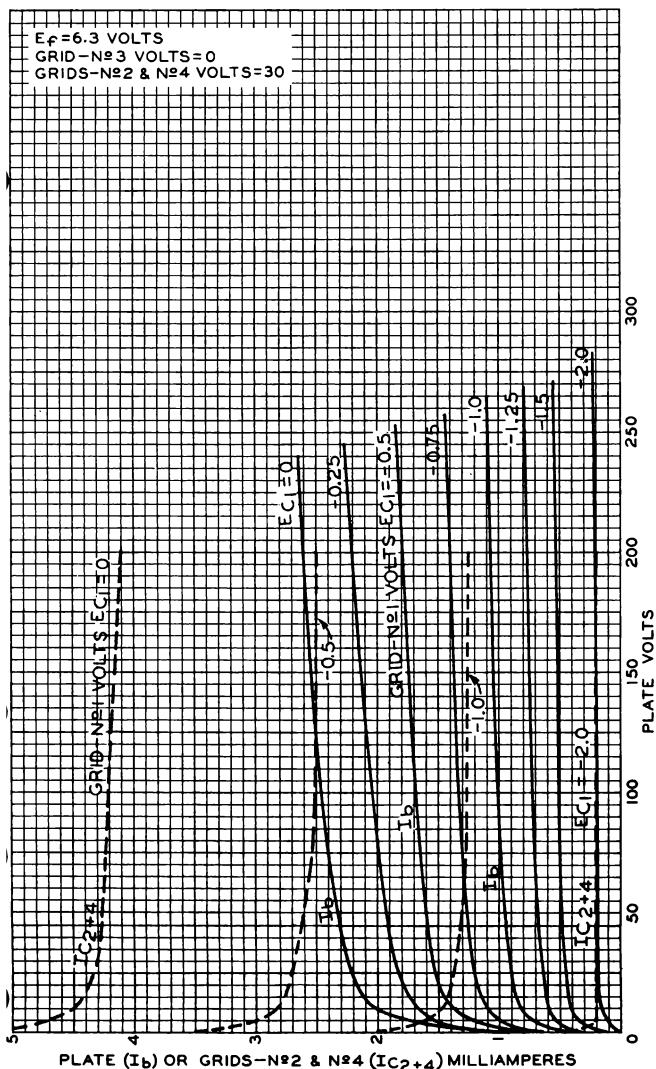
TENTATIVE DATA



6CS6

6CS6

AVERAGE CHARACTERISTICS



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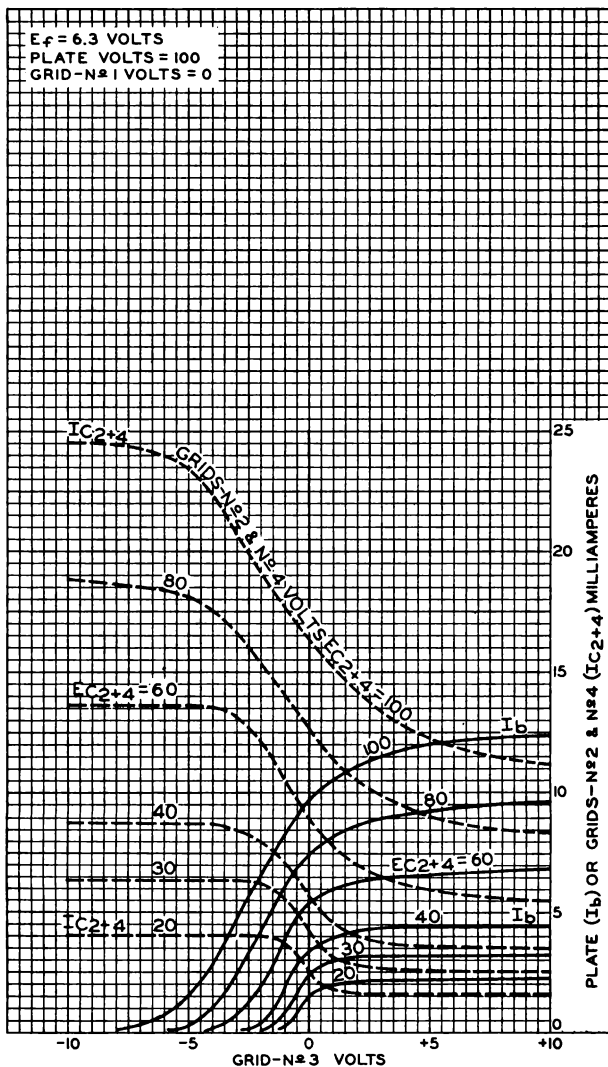
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6CS6



6CS6

AVERAGE CHARACTERISTICS



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8926



6CU5

BEAM POWER TUBE

7-PIN MINIATURE TYPE

6CU5

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 1.2 amp

Direct Interelectrode Capacitances (Approx.):^oGrid No.1 to plate. 0.7 $\mu\mu\text{f}$ Grid No.1 to cathode & grid No.3,
grid No.2, and heater 13.2 $\mu\mu\text{f}$ Plate to cathode & grid No.3,
grid No.2, and heater 8.6 $\mu\mu\text{f}$

Mechanical:

Mounting Position Any

Maximum Overall Length. 2-5/8"

Maximum Seated Length 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip) . . 2" $\pm$ 3/32"

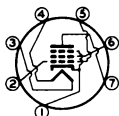
Maximum Diameter. 3/4"

Dimensional Outline See General Section

Bulb. T-5-1/2

Base. Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW. 7CV

Pin 1-Cathode,
Grid No.3
Pin 2-Grid No.1
Pin 3-HeaterPin 4-Heater
Pin 5-Grid No.1
Pin 6-Grid No.2
Pin 7-PlateAMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 135 max. volts

GRID-No.2 (SCREEN) VOLTAGE. 117 max. volts

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value 0 max. volts

PLATE DISSIPATION 6 max. watts

GRID-No.2 INPUT 1.25 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . . . 200 max. volts

Heater positive with respect to cathode . . . 200[▲] max. volts

BULB TEMPERATURE (At hottest point

on bulb surface). 220 max. °C

Typical Operation and Characteristics:

Plate Voltage 120 volts

Grid-No.2 Voltage 110 volts

Grid-No.1 Voltage -8 volts

Peak AF Grid-No.1 Voltage 8 volts

^o Without external shield.[▲] The dc component must not exceed 100 volts.

6CU5



6CU5

BEAM POWER TUBE

Zero-Signal Plate Current	49	ma
Max.-Signal Plate Current	50	ma
Zero-Signal Grid-No.2 Current	4	ma
Max.-Signal Grid-No.2 Current	8.5	ma
Plate Resistance (Approx.)	10000	ohms
Transconductance	7500	μ mhos
Load Resistance	2500	ohms
Total Harmonic Distortion	10	%
Max.-Signal Power Output	2.3	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

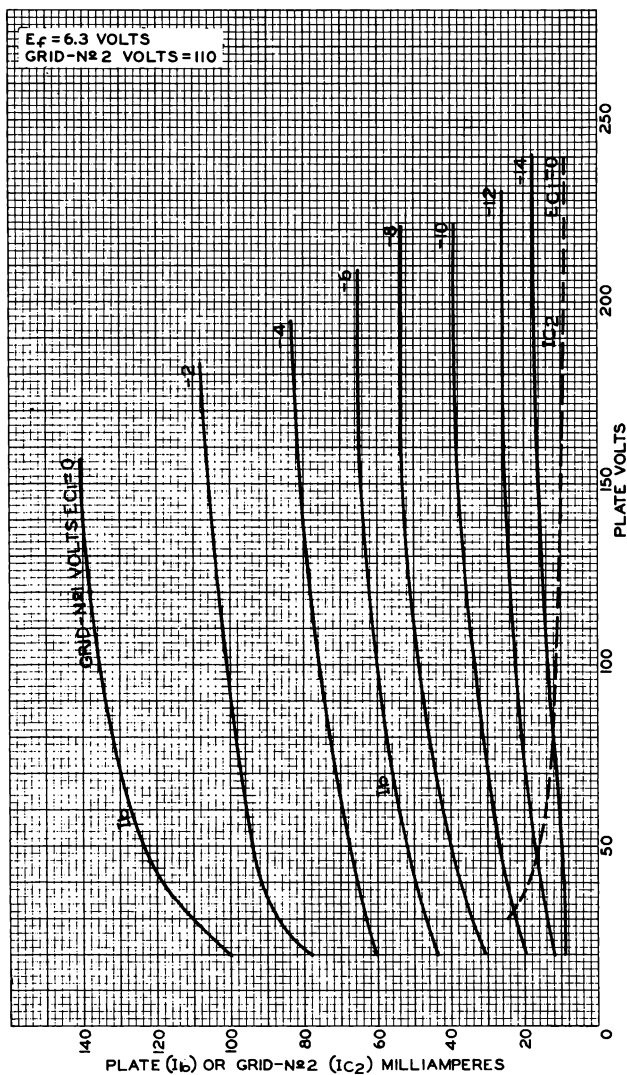
For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm



6CU5

AVERAGE CHARACTERISTICS

6CU5

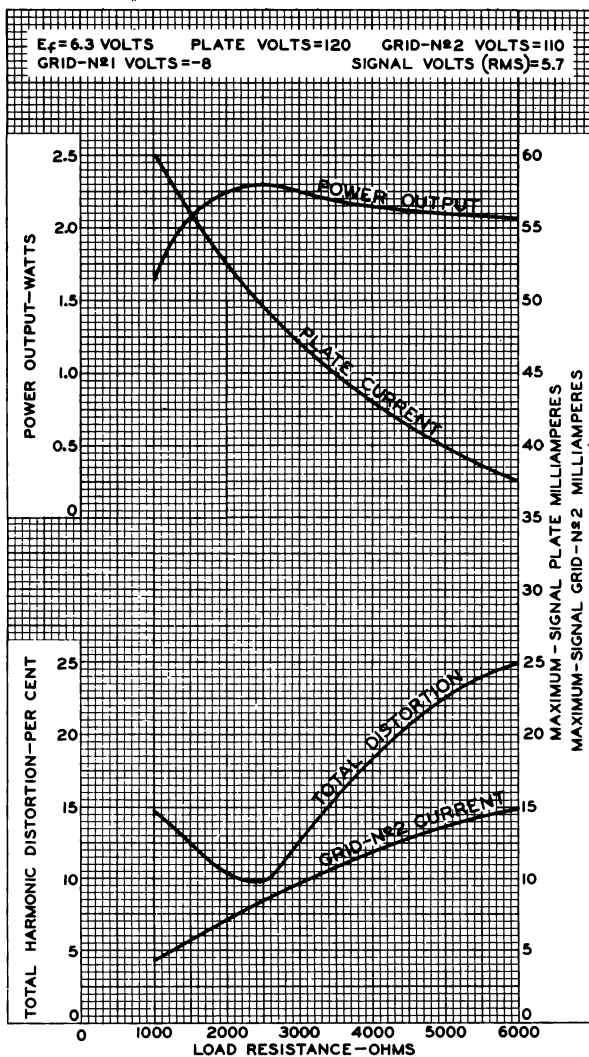


6CU5



6CU5

OPERATION CHARACTERISTICS





TRIPLE-GRID SUPER-CONTROL AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	0.007 max. ^o	μμf
Input	4.7	μμf
Output	6.5	μμf
Overall Length		4-11/16" to 4-15/16"
Seated Height		4-1/16" to 4-5/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap		Small Metal
Base		Small 6-Pin
Pin 1-Heater		Pin 5-Cathode
Pin 2-Plate		Pin 6-Heater
Pin 3-Screen		Cap -Grid
Pin 4-Suppressor		
Mounting Position	BOTTOM VIEW (6F)	Any



- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- ° With close-fitting shield connected to cathode

Maximum Ratings, Typical Operating Conditions and Curves are the same as for type 6U7-G.

← Indicates a change.

Sept. 2, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

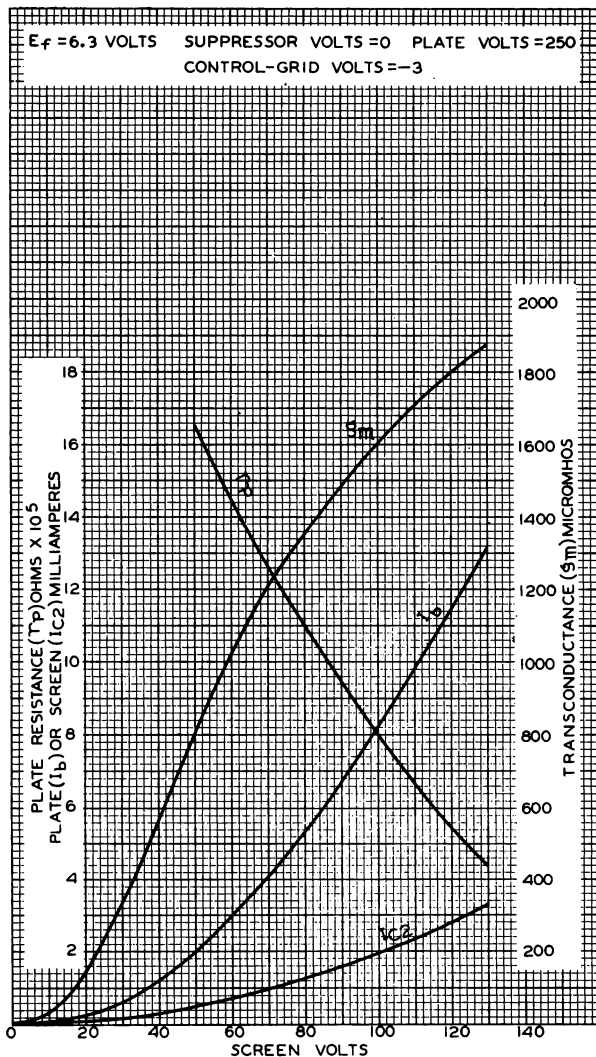
DATA

6D6



6D6

AVERAGE CHARACTERISTICS



JULY 31, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4743RI



6D7

6D7

TRIPLE-GRID DETECTOR AMPLIFIER

RENEWAL TYPE FOR MAJESTIC RECEIVERS

Heater ■	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Overall Length		4-11/16" to 4-15/16"
Seated Height		4-1/16" to 4-5/16"
Maximum Diameter (without shield)		1-9/16"
Bulb (with form-fitting shield)		ST-12
Cap		Small Metal
Base ▲		Small 7-Pin
Pin 1 - Heater		Pin 5 - External Shield
Pin 2 - Plate		Pin 6 - Cathode
Pin 3 - Screen		Pin 7 - Heater
Pin 4 - Suppressor		Cap - Grid

BOTTOM VIEW (7H)

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ Requires a different socket than the medium 7-pin base.

Typical Operating Conditions and Curves for the 6D7 are the same as for type 6J7.

July 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



6DC6

6DC6

SEMIREMOTE-CUTOFF PENTODE

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances (No external shield):

Grid No.1 to plate . . 0.02 max. $\mu\mu\text{f}$ Input 6.5 $\mu\mu\text{f}$ Output 2 $\mu\mu\text{f}$

Mechanical:

Maximum Overall Length 2-1/8"

Maximum Seated Length 1-7/8"

Length, Base Seat to Bulb Top

(Excluding tip) 1-1/2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JEDEC No.E7-1)

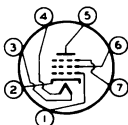
Basing Designation for BOTTOM VIEW 7CM

Pin 1-Grid No.1

Pin 2-Cathode

Pin 3-Heater

Pin 4-Heater



Pin 5-Plate

Pin 6-Grid No.2

Pin 7-Grid No.3,
Internal
ShieldAMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

GRID-No.3 (SUPPRESSOR) VOLTAGE 0 max. volts

GRID-No.2 SUPPLY VOLTAGE 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE See Rating Curve at
front of this Section

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value 0 max. volts

PLATE DISSIPATION 2 max. watts

GRID-No.2 INPUT 0.5 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . 200 max. volts

Heater positive with respect to cathode . 200[▲] max. volts

Typical Operation and Characteristics:

Plate Supply Voltage 200 volts

Grid No.3 Connected to cathode at socket

Grid-No.2 Voltage 150 volts

Cathode-Bias Resistor 180 ohms

Plate Resistance (Approx.) 0.5 megohm

[▲] The dc component must not exceed 100 volts.

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6DC6



6DC6

SEMIREMOTE-CUTOFF PENTODE

Transconductance	5500	μ mos
Grid-No.1 Voltage (Approx.) for transconductance of 50 μ mos	-12.5	volts
Plate Current	9	ma
Grid-No.2 Current	3	ma

Maximum Circuit Values (For maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.25 max. megohm
For cathode-bias operation	1.0 max. megohm

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

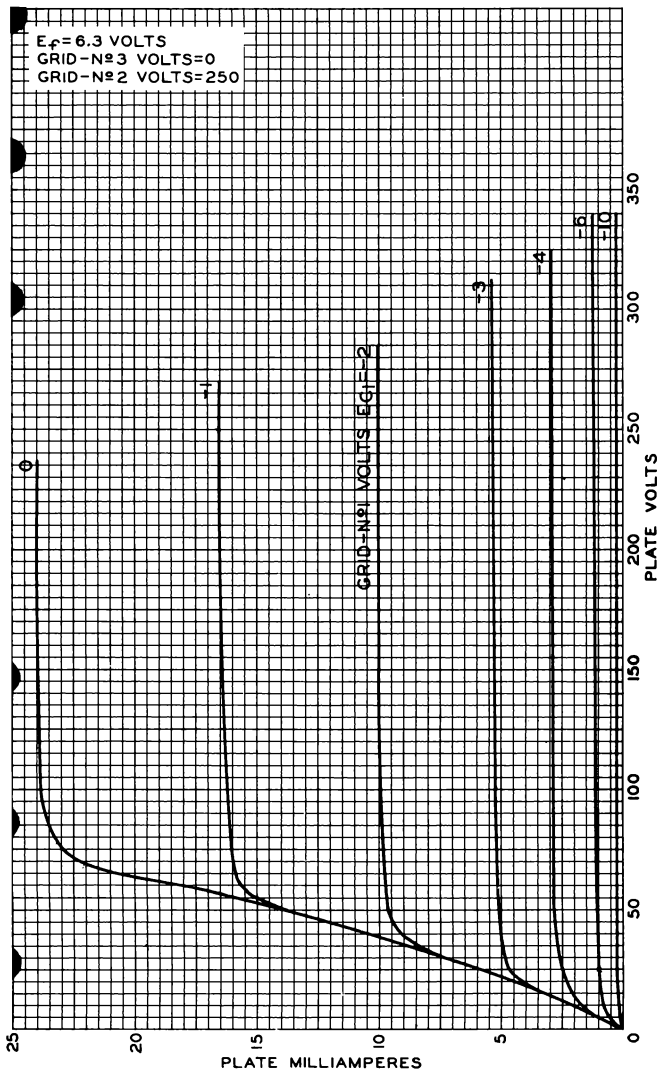
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6DC6

6DC6

AVERAGE PLATE CHARACTERISTICS



MAY. 26, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

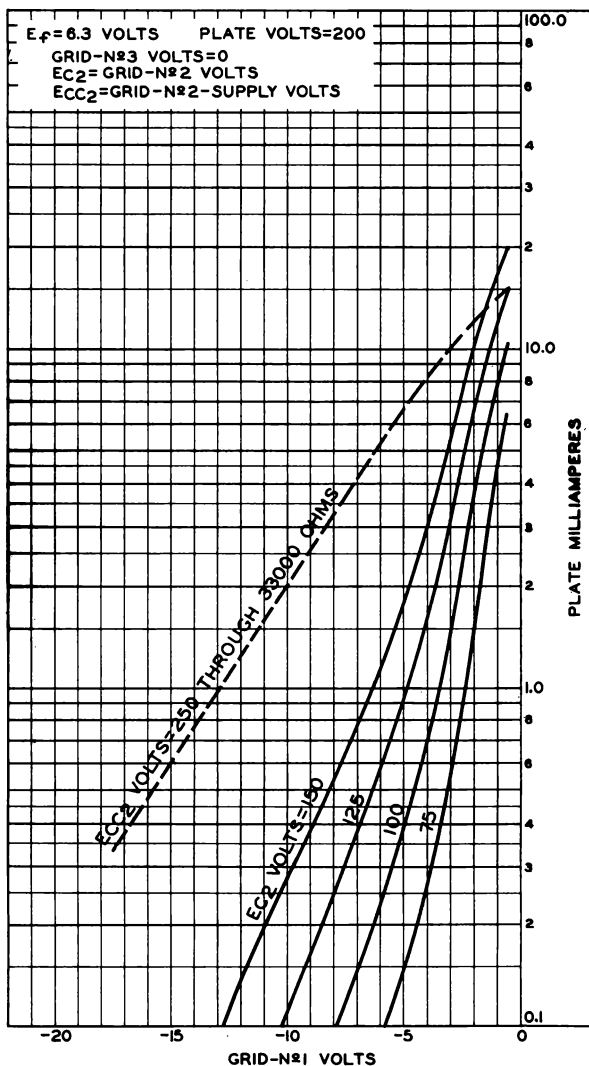
92CM-8330

6DC6



6DC6

AVERAGE CHARACTERISTICS



JUNE 15, 1954

 TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

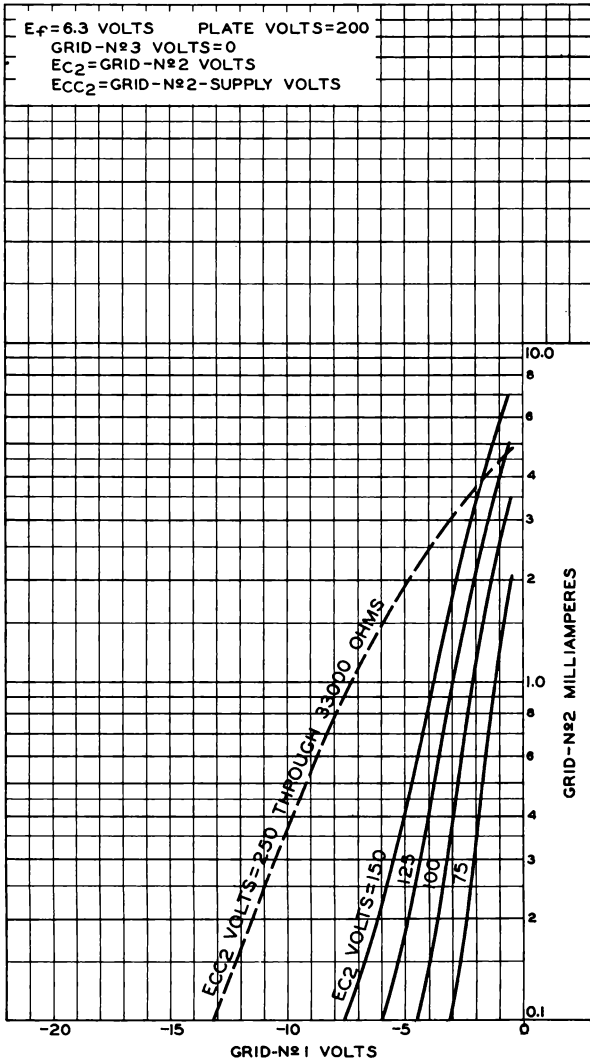
92CM-8337



6DC6

AVERAGE CHARACTERISTICS

6DC6



JUNE 15, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

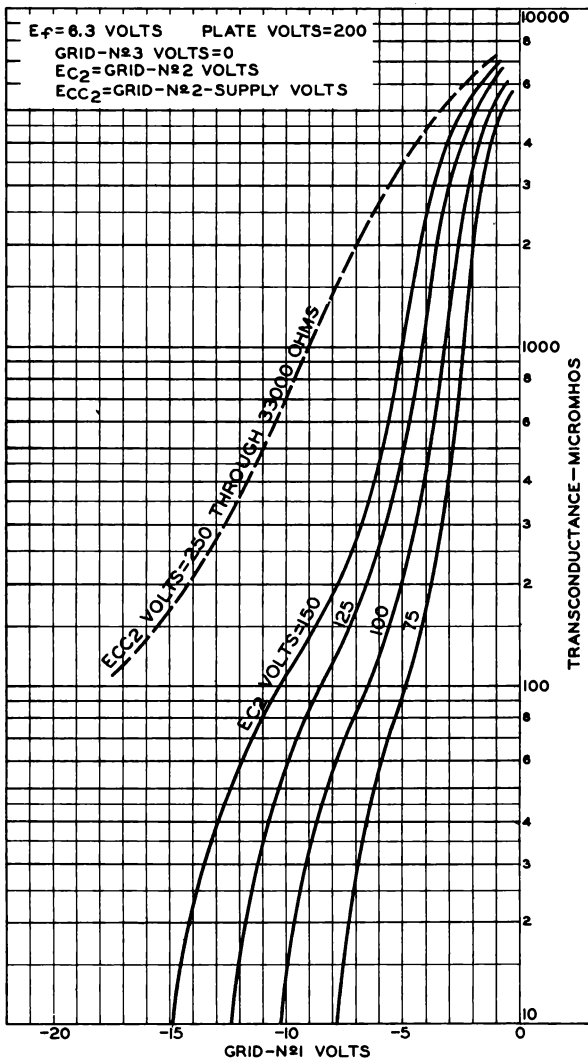
92CM-8338

6DC6



6DC6

AVERAGE CHARACTERISTICS



JUNE 15, 1954

 TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8336

**6DE4****6DE4****HALF-WAVE VACUUM RECTIFIER***For television damper service in 110° systems***GENERAL DATA****Electrical:**

Heater, for Unipotential Cathode:

Voltage. $6.3 \pm 10\%$ ac or dc volts

Current. 1.6 amp

Direct Interelectrode Capacitances (Approx.):^oPlate to cathode and heater. 8.5 μf Cathode to plate and heater. 11.5 μf Heater to cathode. 4 μf **Mechanical:**

Operating Position Any

Maximum Overall Length 3-13/16"

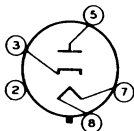
Maximum Seated Length. 3-1/4"

Diameter 1.062" to 1.188"

Bulb T9

Base Short Intermediate-Shell Octal 5-Pin
(Arrangement 2), with External Barriers
(JEDEC Group 1, No. 85-85)

Basing Designation for BOTTOM VIEW 4CG

Pin 2 - Internal Con-
nection—
Do Not Use
Pin 3 - CathodePin 5 - Plate
Pin 7 - Heater
Pin 8 - Heater**DAMPER SERVICE****Maximum Ratings, Design-Maximum Values:***For operation in a 525-line, 30-frame system**PEAK INVERSE PLATE VOLTAGE 5000[‡] max. volts

PEAK PLATE CURRENT 1100 max. ma

DC PLATE CURRENT 175 max. ma

PLATE DISSIPATION. 6.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with
respect to cathode 5000* max. voltsHeater positive with
respect to cathode 300[†] max. volts^o Without external shield.^{*} As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.[‡] This rating is applicable where the duty cycle of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.^{*} The dc component must not exceed 900 volts.[†] The dc component must not exceed 100 volts.

6DE4

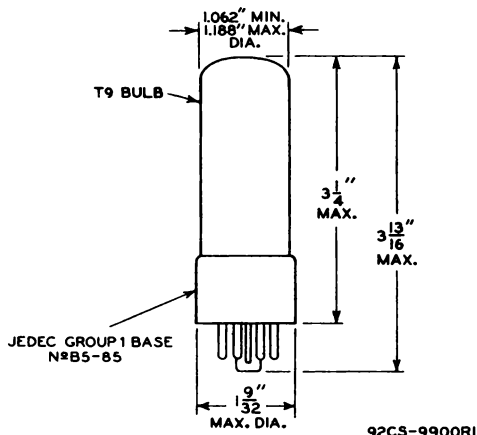


6DE4

HALF-WAVE VACUUM RECTIFIER

OPERATING CONSIDERATIONS

The *base pins* of the 6DE4 fit the standard Octal socket. Socket terminals for pins 1, 2, 4, and 6 should not be used for tie points. It is also recommended that socket clips for these pins be removed to reduce the possibility of arc-over and to minimize leakage.

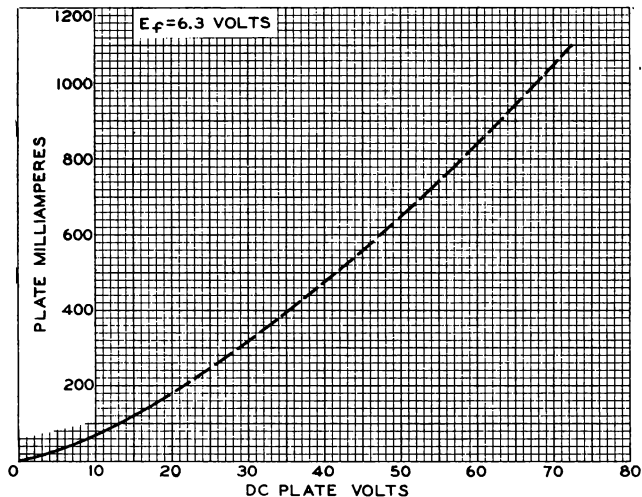




6DE4

6DE4

AVERAGE PLATE CHARACTERISTIC



92CS-9884



6DE6

SHARP-CUTOFF PENTODE

7-PIN MINIATURE TYPE

6DE6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances:^oGrid No.1 to plate 0.020 max. μ fGrid No.1 to cathode, grid No.3 &
internal shield, grid No.2, and
heater 6.3 μ fPlate to cathode, grid No.3 &
internal shield, grid No.2, and
heater 1.9 μ f

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-1/8"

Maximum Seated Length. 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip) 1-1/2" $\pm$ 3/32"

Maximum Diameter 3/4"

Dimensional Outline. See General Section

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 7CM

Pin 1 - Grid No.1

Pin 2 - Cathode

Pin 3 - Heater

Pin 4 - Heater



Pin 5 - Plate

Pin 6 - Grid No.2

Pin 7 - Grid No.3,
Internal
ShieldAMPLIFIER-Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRID-No.3 (SUPPRESSOR) VOLTAGE 0 max. volts

GRID-No.2 (SCREEN) SUPPLY VOLTAGE. 300 max. volts

GRID-No.2 VOLTAGE. See Grid-No.2 Input Rating Chart
at front of Receiving Tube Section

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value 0 max. volts

PLATE DISSIPATION. 2 max. watts

GRID-No.2 INPUT:

For grid-No.2 voltages up to 150 volts . . 0.5 max. watt

For grid-No.2 voltages between 150

and 300 volts See Grid-No.2 Input Rating Chart
at front of Receiving Tube Section^o without external shield.

SEPT. 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6DE6



6DE6

SHARP-CUTOFF PENTODE

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . 200 max. volts

Heater positive with respect to cathode . 200[▲] max. volts

Typical Operation and Characteristics:

Plate Supply Voltage. 200 volts

Grid No.3 Connected to cathode at socket

Grid-No.2 Supply Voltage. 150 volts

Cathode-Bias Resistor 180 ohms

Plate Resistance (Approx.). 0.6 megohm

Transconductance. 6200 μ hos

Plate Current 9.5 ma

Grid-No.2 Current 2.8 ma

Grid-No.1 Voltage (Approx.) for
plate current of 10 μ amp. -10 voltsGrid-No.1 Voltage for trans-
conductance of 600 μ hos
(minimum) under condition
with plate volts=150,
grid-No.2 volts=150, and no
cathode resistor -5.5 volts[▲] The dc component must not exceed 100 volts.

SEPT. 1, 1955

TUBE DIVISION

TENTATIVE DATA

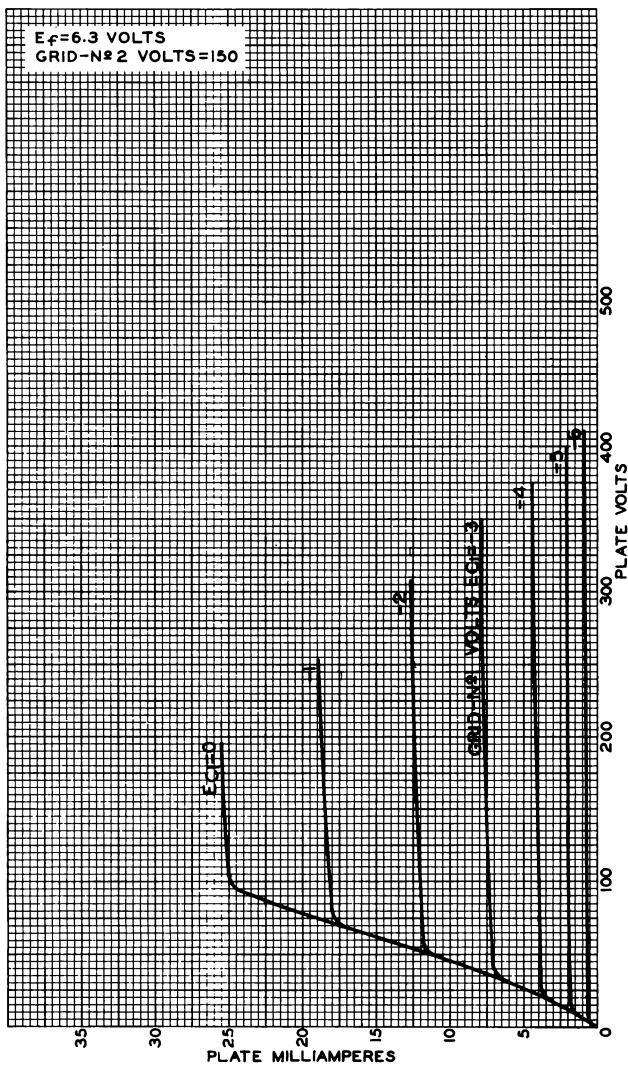
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6DE6

6DE6

AVERAGE PLATE CHARACTERISTICS



APRIL 2, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

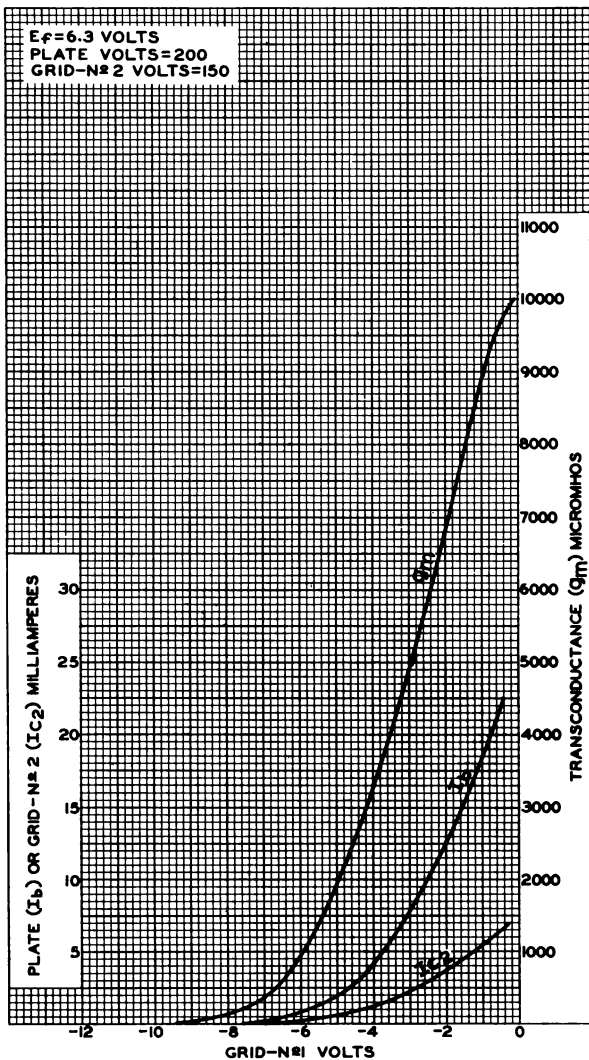
92CM-8578

6DE6



6DE6

AVERAGE CHARACTERISTICS



APRIL 2, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8575

**6DK6****SHARP-CUTOFF PENTODE**

7-PIN MINIATURE TYPE

6DK6**DATA****Electrical:**

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances:⁰Grid No.1 to plate 0.02 max. μf Grid No.1 to cathode, grid No.3 &
internal shield, grid No.2, and
heater 6.3 μf Plate to cathode, grid No.3 & internal
shield, grid No.2, and heater. 1.9 μf **Characteristics, Class A₁ Amplifier:**

Plate-Supply Voltage 125 volts

Grid-No.3. *Connected to cathode at socket*

Grid-No.2-Supply Voltage 125 volts

Cathode Resistor 56 ohms

Plate Resistance (Approx.) 0.35 megohm

Transconductance 9800 μmhos

Plate Current. 12 ma

Grid-No.2 Current. 3.8 ma

Grid-No.1 Voltage (Approx.) for
plate $\mu = 20$ -6.5 volts**Mechanical:**

Operating Position Any

Maximum Overall Length 2-1/8"

Maximum Seated Length. 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip). 1-1/2" $\pm$ 3/32"

Diameter 0.650" to 0.750"

Dimensional Outline. *See General Section*

Bulb T5-1/2

Base Small-Button Miniature 7-Pin (JEDEC No.E7-1)

Basing Designation for BOTTOM VIEW 7CM

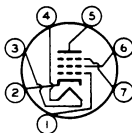
Pin 1-Grid No.1

Pin 2-Cathode

Pin 3-Heater

Pin 4-Heater

Pin 5-Plate



Pin 6-Grid No.2

Pin 7-Grid No.3,

Internal

Shield

AMPLIFIER — Class A₁**Maximum Ratings, Design-Maximum Values:**

PLATE VOLTAGE. 330 max. volts

GRID-No.3 (SUPPRESSOR-GRID) VOLTAGE. 0 max. volts

GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE 330 max. volts

⁰: See next page.

6DK6



6DK6

SHARP-CUTOFF PENTODE

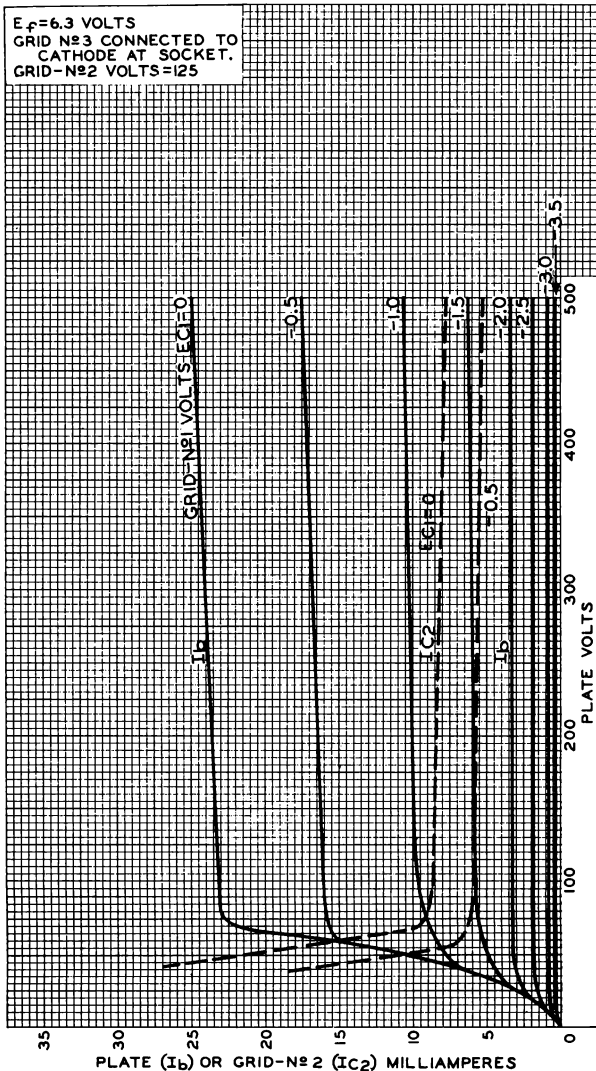
GRID-No.2 VOLTAGE.	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>	
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive-bias value.	0 max.	volts
GRID-No.2 INPUT:		
For grid-No.2 voltages up to		
165 volts.	0.55 max.	watt
For grid-No.2 voltages between		
165 and 330 volts.	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>	
PLATE DISSIPATION.	2.3 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with		
respect to cathode	200 max.	volts
Heater positive with		
respect to cathode	200▲max.	volts
Maximum Circuit Values:		
Grid-No.1-Circuit Resistance:		
For fixed-bias operation	0.25 max.	megohm
For cathode-bias operation	1 max.	megohm
○ Without external shield.		
▲ The dc component must not exceed 100 volts.		



6DK6

6DK6

AVERAGE CHARACTERISTICS



ELECTRON TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

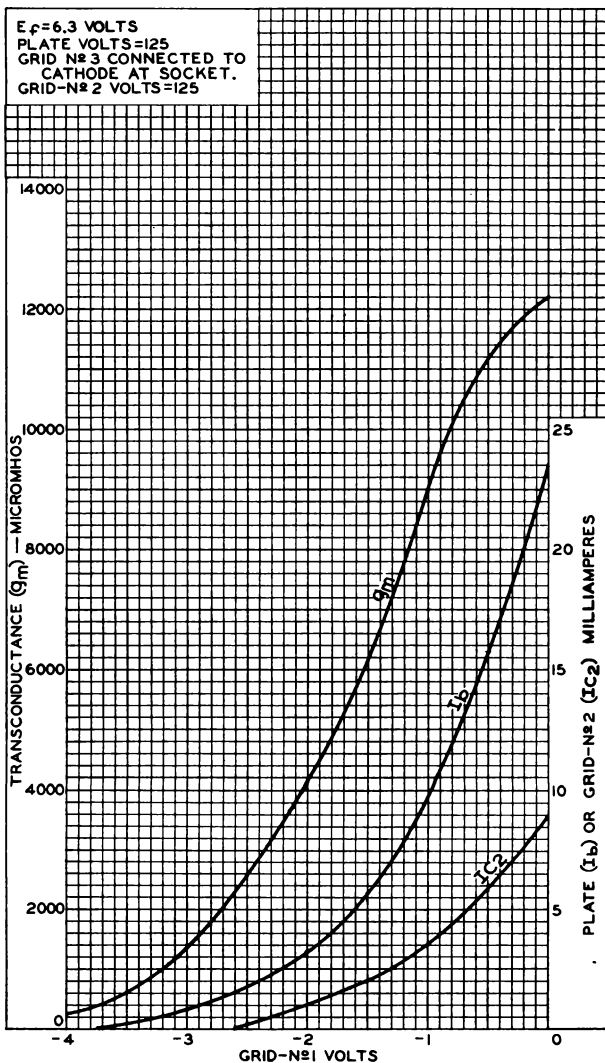
92CM-9851R1

6DK6



6DK6

AVERAGE CHARACTERISTICS





6DT6

6DT6

SHARP-CUTOFF PENTODE7-PIN MINIATURE TYPE
For FM detector service**GENERAL DATA****Electrical:**

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances (Approx.):^oGrid No.1 to plate. 0.02 μ fGrid No.1 to cathode & internal
shield, grid No.3, grid No.2,
and heater. 5.8 μ fGrid No.3 to plate. 1.4 μ fGrid No.1 to grid No.3. 0.1 μ fGrid No.3 to cathode & internal
shield, plate, grid No.2,
grid No.1, and heater 6.1 μ f**Characteristics, Class A₁ Amplifier:**

Plate-Supply Voltage 150 volts

Grid-No.3 Supply Voltage. 0 volts

Grid-No.2 Supply Voltage. 100 volts

Cathode Resistor. 560 ohms

Plate Resistance (Approx.). 0.15 megohm

Transconductance, Grid No.1 to plate. 800 μ hosTransconductance, Grid No.3 to plate. 515 μ hos

Plate Current 1.1 ma

Grid-No.2 Current 2.1 ma

Grid-No.1 Voltage (Approx.) for
plate current of 10 μ amp. -4.5 voltsGrid-No.3 Voltage (Approx.) for
plate current of 10 μ amp. -3.5 volts**Mechanical:**

Mounting Position Any

Maximum Overall Length. 2-1/8"

Maximum Seated Length 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip). . . 1-1/2" $\pm$ 3/32"

Maximum Diameter. 3/4"

Dimensional Outline See General Section

Bulb. T-5-1/2

Base. Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW. 7EN

Pin 1-Grid No.1

Pin 2-Cathode,
Internal
Shield

Pin 3-Heater



Pin 4-Heater

Pin 5-Plate

Pin 6-Grid No.2

Pin 7-Grid No.3

^o with external shield JETEC No.316 connected to cathode.

6DT6



6DT6

SHARP-CUTOFF PENTODE

FM DETECTOR SERVICE

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max. volts
GRID-No.3 (SUPPRESSOR) VOLTAGE.	25 max. volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE	300 max. volts
GRID-No.2 VOLTAGE	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value	0 max. volts
PLATE DISSIPATION	1.5 max. watts

GRID-No.2 INPUT:

For grid-No.2 voltages up to 150 volts. .	1 max. watt
For grid-No.2 voltages between 150 and 300 volts	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode .	200 max. volts
Heater positive with respect to cathode .	200 [▲] max. volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation.	0.25 max. megohm
For cathode-bias operation.	0.5 max. megohm

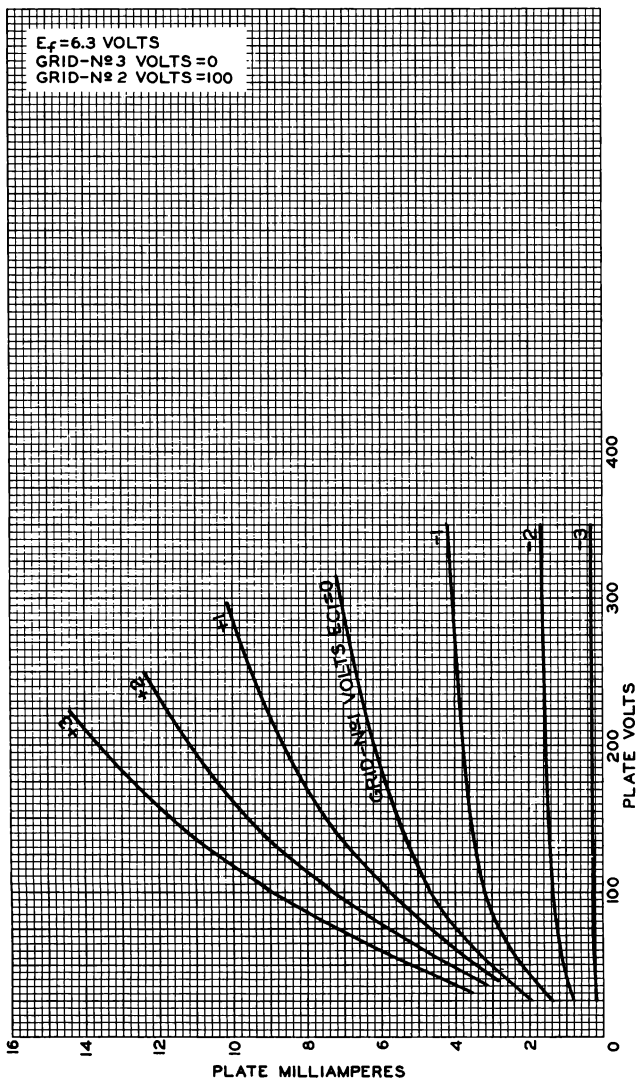
[▲] The dc component must not exceed 100 volts.



6DT6

6DT6

AVERAGE PLATE CHARACTERISTICS



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

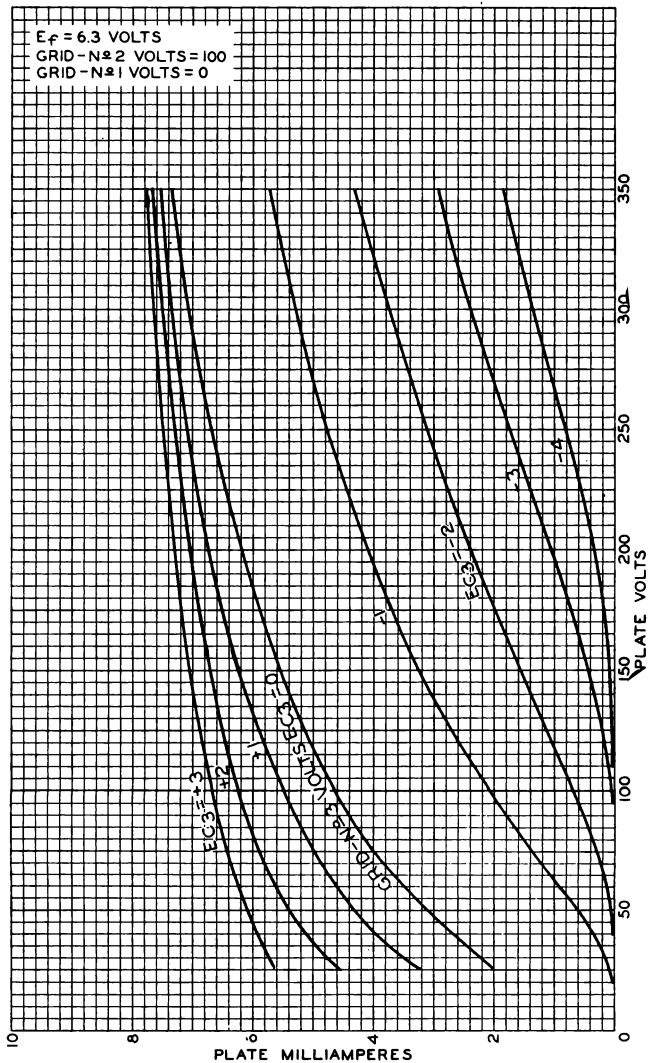
92CM-8827

6DT6



6DT6

AVERAGE PLATE CHARACTERISTICS



TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

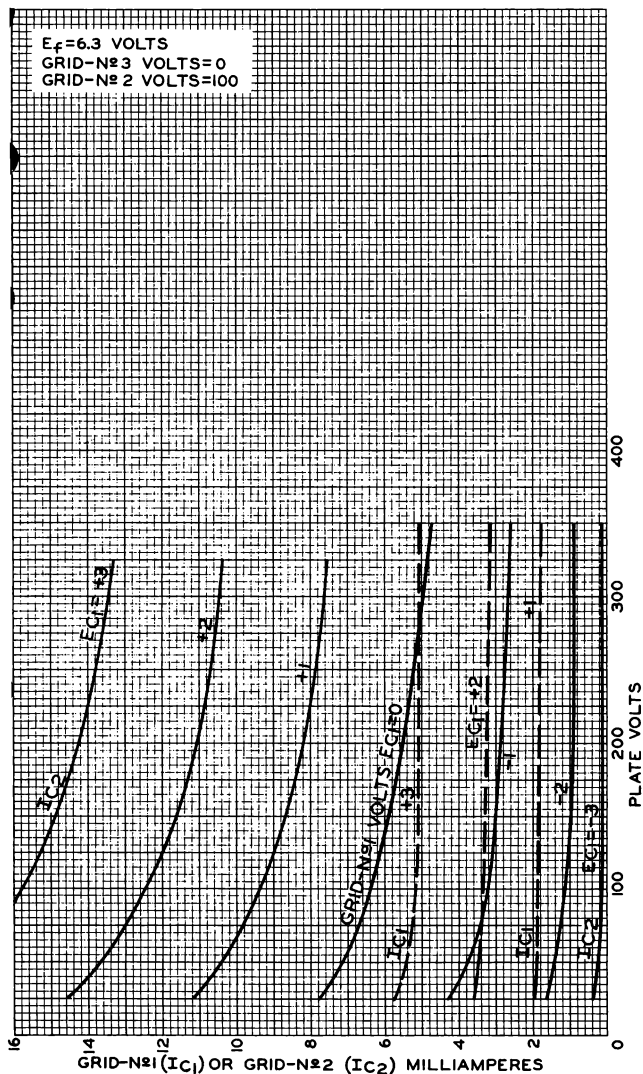
92CM-8830



6DT6

6DT6

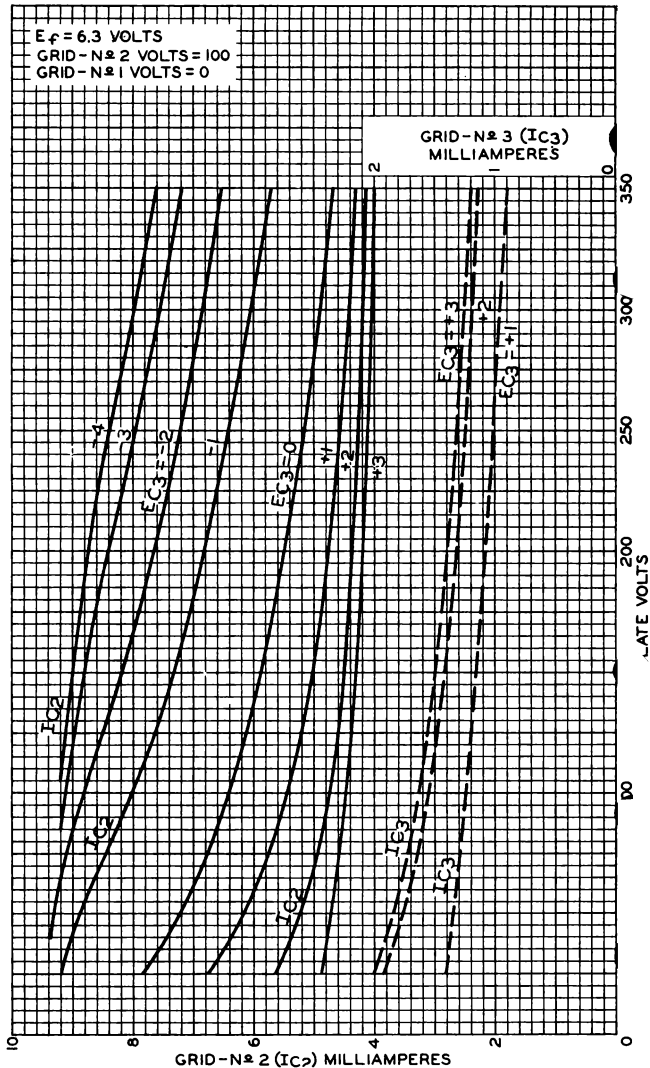
AVERAGE CHARACTERISTICS





6DT6

AVERAGE CHARACTERISTICS

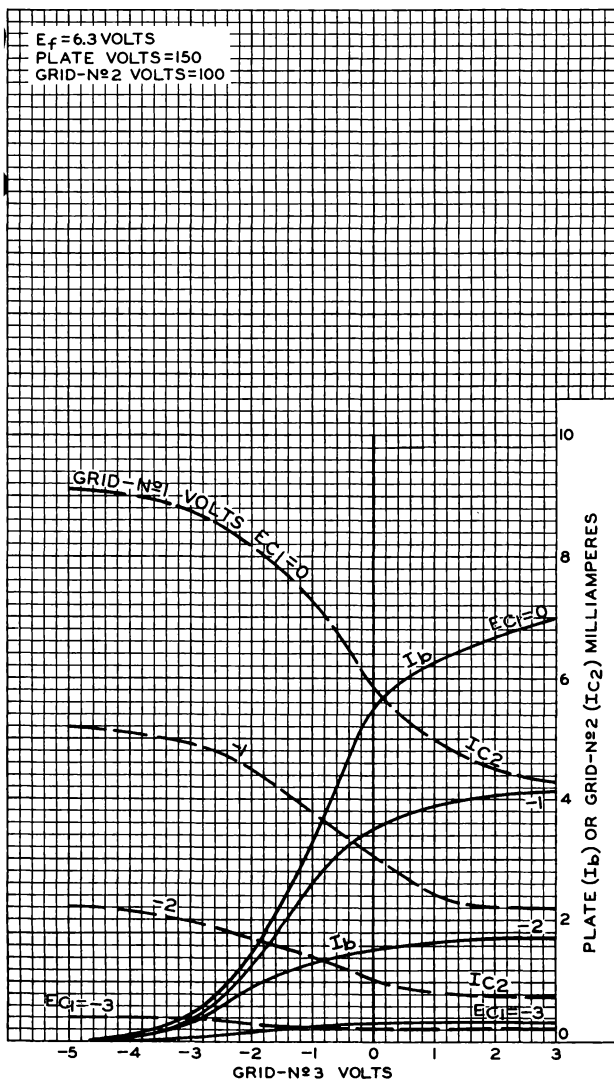


TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8829

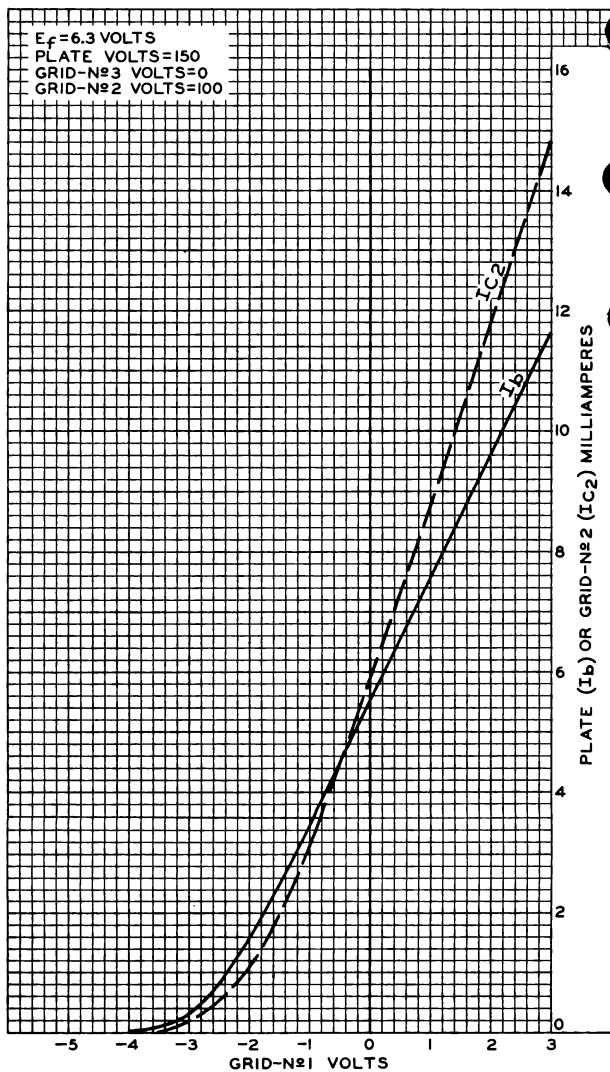
6DT6

AVERAGE CHARACTERISTICS



6DT6

AVERAGE CHARACTERISTICS





6E5

6E5

ELECTRON-RAY TUBE INDICATOR TYPE WITH TRIODE UNIT

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Overall Length		4" $\pm$ 3/16"
Seated Height		3-3/8" $\pm$ 3/16"
Maximum Diameter		1-3/16"
Bulb		T-9
Base		Small 6-Pin
Pin 1 - Heater		Pin 4 - Target
Pin 2 - Plate		Pin 5 - Cathode
Pin 3 - Grid		Pin 6 - Heater
Mounting Position	BOTTOM VIEW (6R)	Any*



Maximum and Minimum Ratings Are Design-Center Values

INDICATOR SERVICE

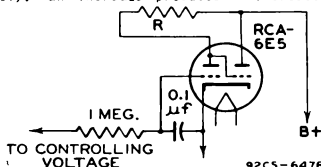
Plate-Supply Voltage		250 max. volts	
Target Voltage		250 max. volts	
		125 min. volts	
D-C Heater-Cathode Potential		90 max. volts	
Typical Operation:			
Plate and Target Supply	125	250	volts
Series Triode-Plate Resistor**			
	1	1	megohm
Target Current*** $\uparrow$	0.8	2	ma.
Triode-Plate Current***	0.1	0.2	ma.
Triode-Grid Voltage (Approx.):			
For shadow angle of 0°	-4.0	-7.5	volts
For shadow angle of 90°	0	0	volts

* The plane of the ray-control electrode passes through pins No. 2 and No. 5.

** Designated as R in circuit diagram. $\uparrow$ Subject to wide variations.

*** For zero triode-grid voltage. $\leftarrow$ Indicates a change.

The 6E5 is a high-vacuum type of tube designed to indicate visually the effect of change in the controlling voltage. For different controlling voltages, the shaded pattern produced on the fluorescent target varies through an angle from 90° to approximately 0°. The extent of the shaded area is controlled by the voltage on the ray-control electrode which is an extension of the triode plate between cathode and target. The voltage on the ray-control electrode is determined by the voltage applied to the grid of the triode connected as a d-c amplifier as shown in the circuit. A decrease in triode-grid bias decreases the voltage on the ray-control electrode; conversely, an increase produces an increased voltage on the ray-control electrode. In the practical use of the 6E5 as a tuning indicator, controlling voltage applied to the triode-grid is obtained from a suitable point in the a.v.c. circuit.



The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations. $\leftarrow$ Indicates a change.

DEC. 15, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6E5

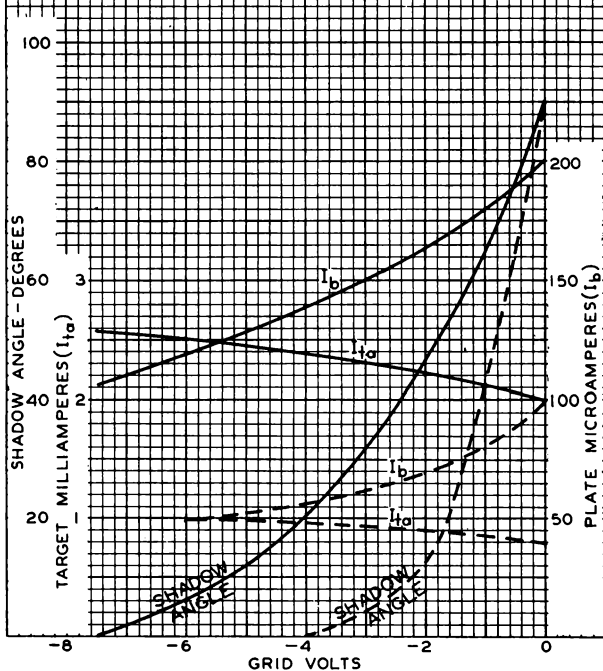
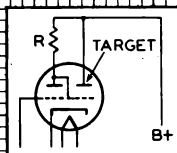


6E5

AVERAGE CONTROL CHARACTERISTICS

 $E_f = 6.3$ VOLTS

CURVE	PLATE-SUPPLY VOLTS ($B+$)	SERIES PLATE RESISTOR (R) - MEG.
—	250	1.0
- - -	125	1.0



OCT. 12, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4422R4



6E6

6E6

TWIN-TRIODE POWER AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.6	amp.
Maximum Overall Length		4-11/16"
Maximum Seated Height		4-1/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium 7-Pin
Pin 1-Heater		Pin 5-Grid T ₁
Pin 2-Plate T ₁		Pin 6-Plate T ₁
Pin 3-Grid T ₂		Pin 7-Heater
Pin 4-Cathode		
Mounting Position	BOTTOM VIEW (7B)	Any

For convenience, one triode is identified as T_1 ; the other as T_2 .

PUSH-PULL AMPLIFIER—Each Unit

Plate Voltage		250 max. volts
<i>Typical Operation and Characteristics—Class A₁ Amplifier:</i>		
Plate	180	250 volts
Grid Δ	-20	-27.5 volts
Amp. Fact.	6	6
Plate Res.	4300	3500 ohms
Transcond.	1400	1700 μ mhos
Plate Cur.	11.5	18 ma.
Effec. Load Res. (plate-to-plate)	15000*	14000** ohms
Max.-Sig. Power Output #	0.75	1.6 watts

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

Δ The type of input-coupling should not introduce too much resistance in the grid circuit. Transformer- or impedance-input coupling devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not to exceed 0.5 megohm.

* For parallel operation: load resistance = 3750 ohms.

** For parallel operation: load resistance = 3500 ohms.

For both triode units.

July 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

6E7



6E7

TRIPLE-GRID SUPER-CONTROL AMPLIFIER

RENEWAL TYPE FOR MAJESTIC RECEIVERS

Heater ■	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Overall Length		4-11/16" to 4-15/16"
Seated Height		4-1/16" to 4-5/16"
Maximum Diameter (without shield)		1-9/16"
Bulb (with form-fitting shield)		ST-12
Cap		Small Metal
Base ▲		Small 7-Pin
Pin 1 - Heater		Pin 5 - External Shield
Pin 2 - Plate		Pin 6 - Cathode
Pin 3 - Screen		Pin 7 - Heater
Pin 4 - Suppressor		Cap - Grid

BOTTOM VIEW (7H)

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

- ▲ Requires a different socket than the medium 7-pin base.

Typical Operating Conditions and Curves for the 6E7 are the same as for Type 6U7-G.

July 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

**6EA8****6EA8****MEDIUM-MU TRIODE—
SHARP-CUTOFF PENTODE**

9-PIN MINIATURE TYPE

*With heater having controlled warm-up time***GENERAL DATA****Electrical:**

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts

Current $0.45 \pm 6\%$ amp

Warm-up time (Average). . . 11 sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances:

	<i>Without External Shield</i>	<i>With External Shield^o</i>	
Triode Unit:			
Grid to plate	1.7	1.7	$\mu\mu\text{f}$
Grid to cathode and heater.	3	3.2	$\mu\mu\text{f}$
Plate to cathode and heater.	0.3	1.1	$\mu\mu\text{f}$
Pentode Unit:			
Grid No.1 to plate. . . .	0.02 max.	0.01 max.	$\mu\mu\text{f}$
Grid No.1 to cathode & grid No.3 & internal shield, grid-No.2, and heater.	5	5	$\mu\mu\text{f}$
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater .	2.6	3.4	$\mu\mu\text{f}$
Heater to cathode	3	3 [•]	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Plate-Supply Voltage.	150	125	volts
Grid-No.2 Voltage	—	125	volts
Grid-No.1 Voltage	—	-1	volt
Cathode Resistor.	56	—	ohms
Amplification Factor.	40	—	
Plate Resistance (Approx.).	5000	80000	ohms
Transconductance.	8500	6400	μmhos
Plate Current	18	12	ma
Grid-No.2 Current	—	4	ma
Grid-No.1 Voltage (Approx.) for plate $\mu\text{a} = 10$	-12	-9	volts

Mechanical:

Operating Position. Any

^o, [•]: See next page.

6EA8

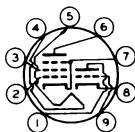


6EA8

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

Maximum Overall Length. 2-3/16"
 Maximum Seated Length. 1-15/16"
 Length, Base Seat to Bulb Top (Excluding tip). . 1-9/16" $\pm$ 3/32"
 Diameter. 0.750" to 0.875"
 Dimensional Outline. See General Section
 Bulb. T6-1/2
 Base. Small-Button Noval 9-Pin (JEDEC No.E9-1)
 Basing Designation for BOTTOM VIEW. 9AE

Pin 1—Triode Plate
 Pin 2—Pentode
 Grid No.1
 Pin 3—Pentode
 Grid No.2
 Pin 4—Heater
 Pin 5—Heater
 Pin 6—Pentode Plate



Pin 7—Pentode
 Cathode,
 Pentode
 Grid No.3,
 Internal
 Shield
 Pin 8—Triode Cathode
 Pin 9—Triode Grid

CONVERTER SERVICE

Maximum Ratings, Design-Maximum Values:

	Triode Unit as Osc.	Pentode Unit as Mixer	
PLATE VOLTAGE	330 max.	330 max.	volts
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE.	—	330 max.	volts
GRID-No.2 VOLTAGE	—	See Grid-No.2 Input	

Rating Chart at front of Receiving Tube Section

GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Positive-bias value . . .	0 max.	0 max.	volts
GRID-No.2 INPUT:			
For grid-No.2 voltages up to 165 volts	—	0.55 max.	watt
For grid-No.2 voltages between 165 and 330 volts	—	See Grid-No.2 Input	

Rating Chart at front of Receiving Tube Section

PLATE DISSIPATION	3 max.	3.1 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode. . .	200 max.	200 max.	volts
Heater positive with respect to cathode. . .	200 [▲] max.	200 [▲] max.	volts

○ With external shield JEDEC No.315 connected to cathode of unit under test except as noted.

● With external shield JEDEC No.315 connected to ground.

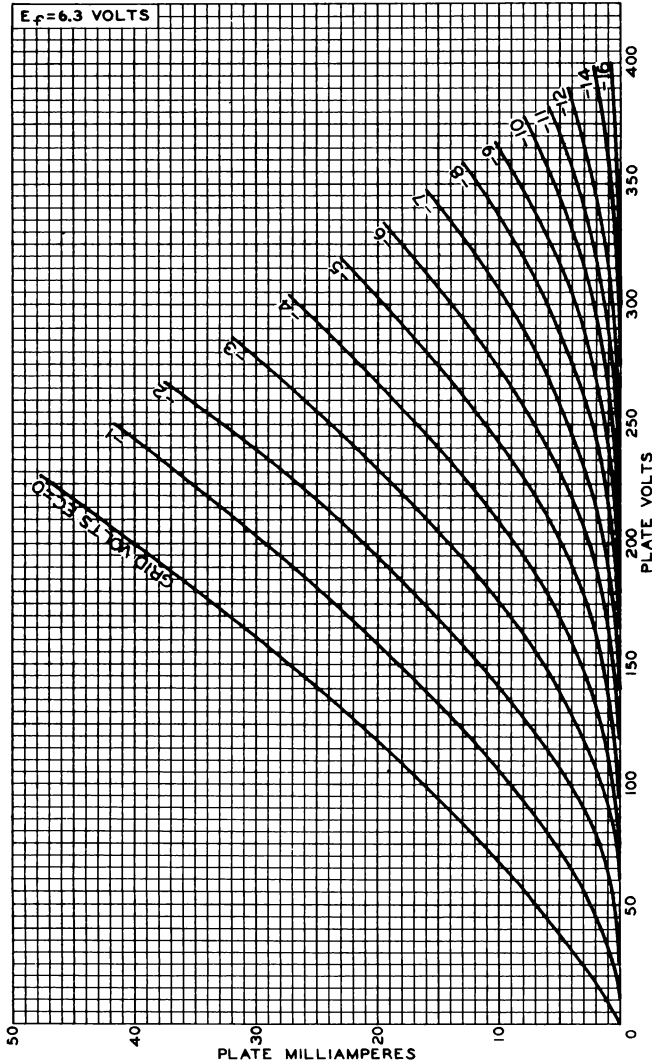
▲ The dc component must not exceed 100 volts.



6EA8

AVERAGE PLATE CHARACTERISTICS
TRIODE UNIT

6EA8



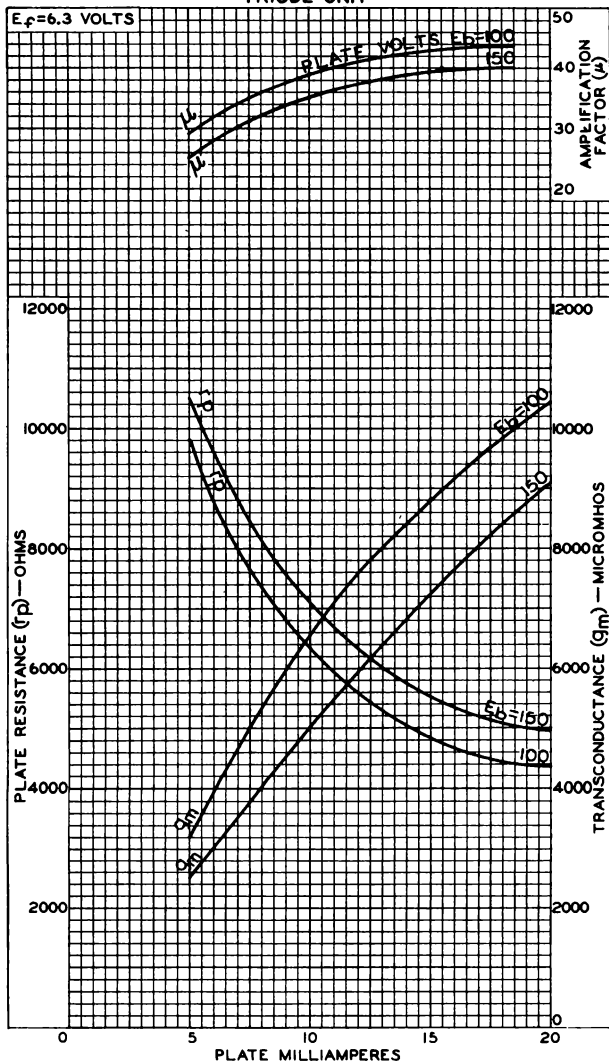
6EA8



6EA8

AVERAGE CHARACTERISTICS

TRIODE UNIT

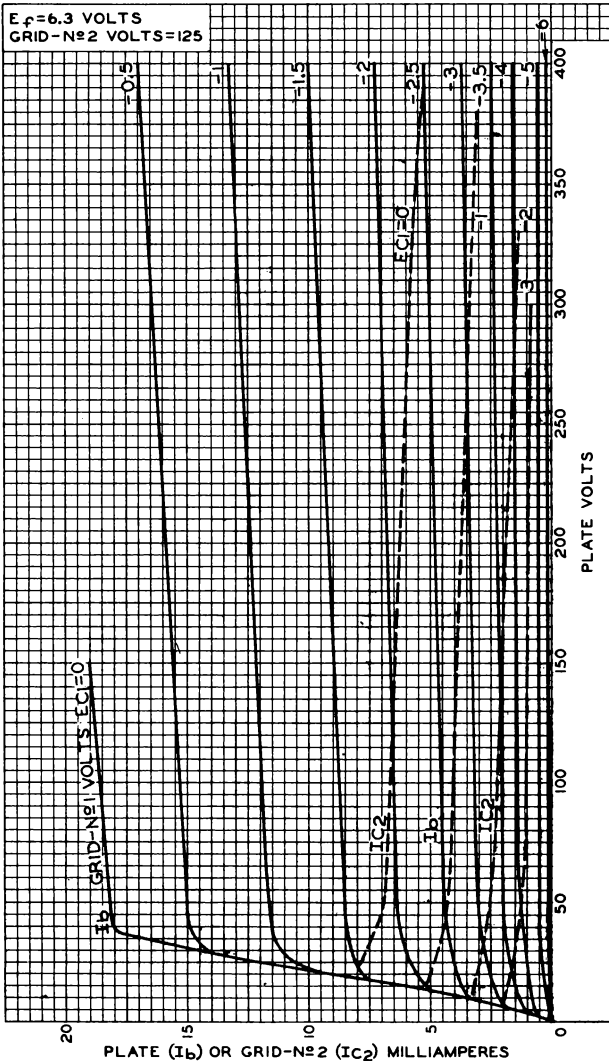




6EA8

6EA8

AVERAGE CHARACTERISTICS PENTODE UNIT



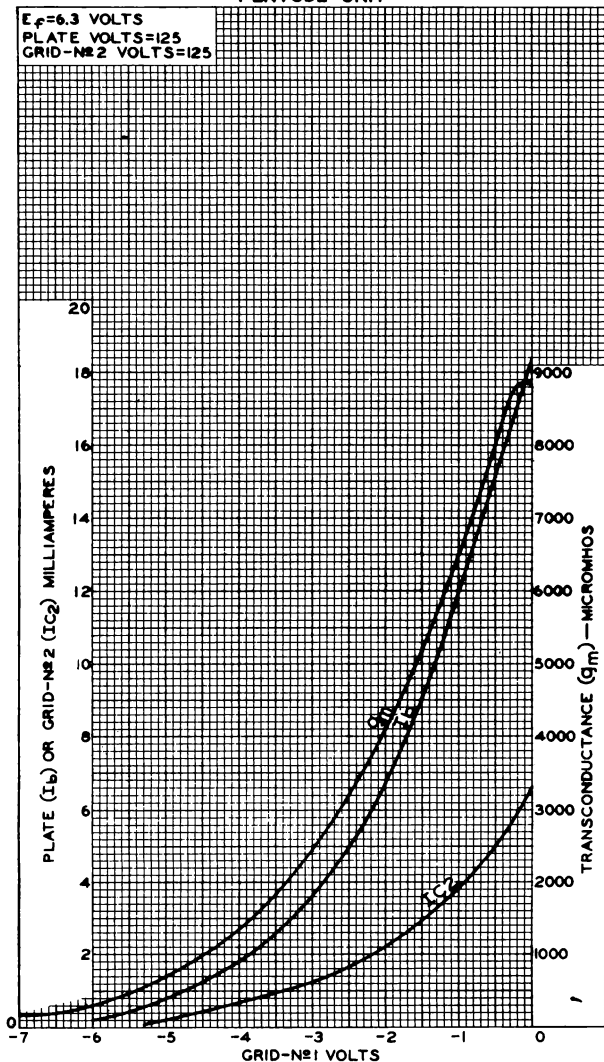
6EA8



6EA8

AVERAGE CHARACTERISTICS
PENTODE UNIT

$E_f = 6.3$ VOLTS
PLATE VOLTS = 125
GRID-№2 VOLTS = 125





6F5, 6F5-GT HIGH-MU TRIODE

6F5
6F5-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances (Approx.):

	6F5 ^o	6F5-GT ^{oo}
Grid to Plate.	2.4	2.8 . . . μuf
Grid to Cathode.	5.5	2.2 . . . μuf
Plate to Cathode.	4.0	3.2 . . . μuf

^o With shell connected to cathode.

^{oo} With no external shield.

Mechanical:

Mounting Position. . .

Any

Maximum Overall Length

3-1/8"

Seated Length.

2-7/16" ± 1/8"

Maximum Diameter. . . .

1-5/16"

Bulb

Metal Shell, MTT8A

Cap

Miniature

Base

Small-Wafer

Octal 7-Pin

Any

3-5/16"

2-5/16"—2-3/4"

1-5/16"

T-9

Miniature

Intermed. Shell

Octal 7-Pin

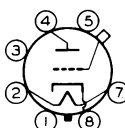
G-5M₁

Basing Designation .

5M₁

BOTTOM VIEW

Pin 1 { 6F5, Shell
6F5-GT, No
Connection
Pin 2 - Heater
Pin 3 - No
Connection



Pin 4 - Plate
Pin 5 - No
Connection
Pin 7 - Heater
Pin 8 - Cathode
Cap - Grid

Maximum Ratings and Characteristics for the 6F5 and 6F5-GT are the same as shown for Type 6SF5. Typical Operating Conditions are shown in the RESISTANCE-COUPLED AMPLIFIER CHART at front of this Section.

Curve under Type 6SF5 also applies to the 6F5 and 6F5-GT.

←Indicates a change.

JUNE 20, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

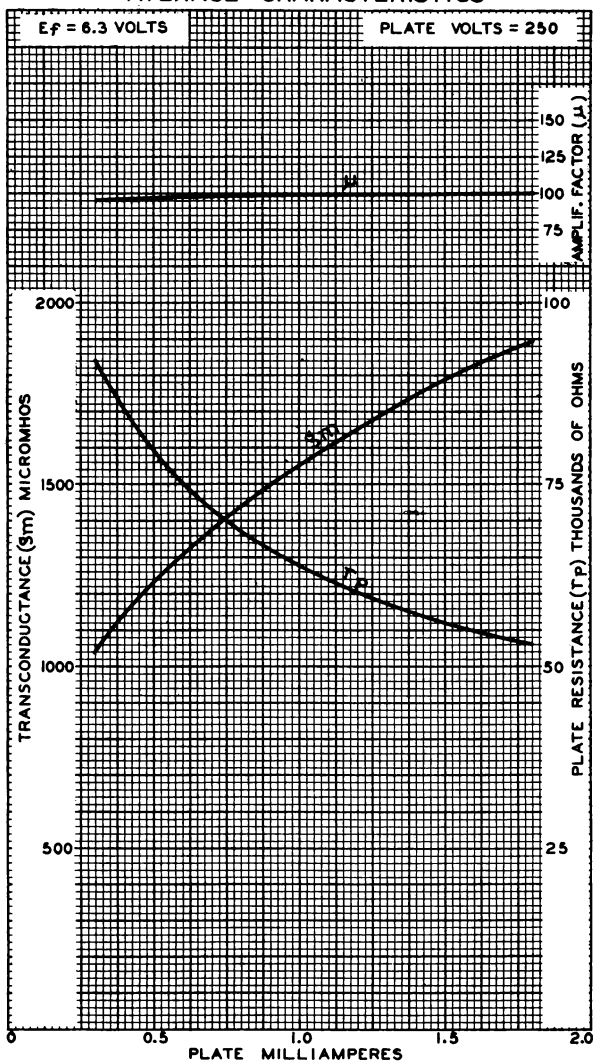
DATA

6F5



6F5

AVERAGE CHARACTERISTICS



SEPT. 4, 1935

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4470

6F6
6F6-G

6F6, 6F6-G

POWER AMPLIFIER PENTODE

Heater	Coated Unipotential Cathode		
Voltage	6.3	a-c or d-c volts	
Current	0.7	amp.	
Direct Interelectrode Capacitances (Approx.):			
	6F60	6F6-G ⁰⁰	
Grid to Plate	0.2	0.5	μf
Input	6.5	8.0	μf
Output	13	6.5	μf
Maximum Overall Length	3-1/4"	4-5/8"	
Maximum Seated Height	2-11/16"	4-1/16"	
Maximum Diameter	1-5/16"	1-13/16"	
Bulb	Metal Shell, MT-8		ST-14
Base	{ Small Wafer { Octal 7-Pin		{ Medium Shell { Octal 7-Pin
Basing Designation	7S		G-7S
Pin 1 { 6F6, Shell { 6F6-G, No Con.			Pin 4 - Screen
Pin 2 - Heater			Pin 5 - Grid
Pin 3 - Plate			Pin 7 - Heater
Mounting Position			Pin 8 - Cathode
			Any



BOTTOM VIEW

Maximum Ratings Are Design-Center Values
SINGLE-TUBE AMPLIFIER (Pentode Connection)

Plate Voltage	375 max. volts
Screen Voltage	285 max. volts
Plate Dissipation	11 max. watts
Screen Dissipation	3.75 max. watts

Typical Operation and Characteristics - Class A₁ Amplifier:*

	Fixed Bias		Cathode Bias		
Plate	250	285	250	285	volts
Screen	250	285	250	285	volts
Grid ^o	-16.5	-20	-	-	volts
Cathode Resistor	-	-	410	440	ohms
Peak A-F Grid Volt.	16.5	20	16.5	20	volts
Zero-Sig. Plate Cur.	34	38	34	38	ma.
Max.-Sig. Plate Cur.	36	40	35	38	ma.
Zero-Sig. Screen Cur.	6.5	7	6.5	7	ma.
Max.-Sig. Screen Cur.	10.5	13	9.7	12	ma.
Plate Res. (approx.)	80000	78000	-	-	ohms
Transconductance	2500	2550	-	-	μmhos
Load Resistance	7000	7000	7000	7000	ohms
Tot. Harmonic Dist.	8	9	8.5	9	%
Max.-Sig. Power Output	3.2	4.8	3.1	4.5	watts

SINGLE-TUBE AMPLIFIER (Triode Connection)†

Plate Voltage	350 max. volts
Plate & Screen Dissipation (Total)	10 max. watts

* In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

^o With shell connected to cathode.

[∞] With no external shield.

‡, *, †: See next page.

← Indicates a change.

May 1, 1942

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

6F6
6F6-G



6F6, 6F6-G

POWER AMPLIFIER PENTODE

(continued from preceding page)

Typical Operation and Characteristics - Class A_1 Amplifier:*

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Plate	250	250	volts
Grid*	-20	-	volts
Cathode Resistor	-	650	ohms
Peak A-F Grid Voltage	20	20	volts
Zero-Sig. Plate Cur.	31	31	ma.
Max.-Sig. Plate Cur.	34	32	ma.
Plate Resistance	2600	-	ohms
Amp. Factor	6.8	-	
Transconductance	2600	-	μ mhos
Load Resistance	4000	4000	ohms
Total Harmonic Dist.	6.5	6.5	%
Max.-Sig. Power Output	0.85	0.8	watt

PUSH-PULL AMPLIFIER (Pentode Connection)

Plate Voltage	375 max.	volts
Screen Voltage	285 max.	volts
Plate Dissipation	11 max.	watts
Screen Dissipation	3.75 max.	watts

Typical Operation - Class A_1 Amplifier:*

Unless otherwise specified, values are for 2 tubes

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Plate	315	315	volts
Screen	285	285	volts
Grid*	-24	-	volts
Cathode Resistor	-	320	ohms
Peak A-F Grid-to-Grid Voltage	48	58	volts
Zero-Sig. Plate Cur.	62	62	ma.
Max.-Sig. Plate Cur.	80	73	ma.
Zero-Sig. Screen Cur.	12	12	ma.
Max.-Sig. Screen Cur.	19.5	18	ma.
Effective Load Resistance (plate to plate)	10000	10000	ohms
Total Harmonic Dist.	4	3	%
Max.-Sig. Power Output	11	10.5	watts

PUSH-PULL AMPLIFIER (Pentode Connection)

Plate Voltage	375 max.	volts
Screen Voltage	285 max.	volts
Plate Dissipation	11 max.	watts
Screen Dissipation	3.75 max.	watts

Typical Operation - Class AB_2 Amplifier:*

Unless otherwise specified, values are for 2 tubes

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Plate	375	375	volts

* Subscript 1 indicates that grid current does not flow during any part of input cycle.

* Subscript 2 indicates that grid current flows during some part of input cycle.

*, †: See next page.

May 1, 1942

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



6F6, 6F6-G

6F6
6F6-G

POWER AMPLIFIER PENTODE

(continued from preceding page)

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Screen	250	250	volts
Grid*	-26	-	volts
Cathode Resistor [†]	-	340	ohms
Peak A-F Grid-to- Grid Voltage	82	94	volts
Zero-Sig. Plate Cur.	34	54	ma.
Max.-Sig. Plate Cur.	82	77	ma.
Zero-Sig. Screen Cur.	5	8	ma.
Max.-Sig. Screen Cur.	19.5	18	ma.
Effective Load Resist- ance (plate to plate)	10000	10000	ohms
Total Harmonic Dist.	3.5	5	%
Max.-Sig. Power Output	18.5	19	watts

PUSH-PULL AMPLIFIER (Triode Connection)†

Plate Voltage	350 max.	volts
Plate & Screen Dissipation (Total)	10 max.	watts

Typical Operation - Class AB₂ Amplifier:*

Unless otherwise specified, values are for 2 tubes

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Plate	350	350	volts
Grid*	-38	-	volts
Cathode Resistor ‡	-	730	ohms
Peak A-F Grid-to- Grid Voltage	123	132	volts
Zero-Sig. Plate Cur.	48	50	ma.
Max.-Sig. Plate Cur.	92	60	ma.
Effective Load Resist- ance (plate to plate)	6000	10000	ohms
Total Harmonic Dist.	2	3	%
Max.-Sig. Power Output	13	9	watts

* Type of input coupling used should not introduce too much resistance in the grid circuit. Transformer- or impedance-coupling devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance as high as, but not greater than 0.5 megohm.

† The value given for the cathode resistor is determined for a grid bias of -21 volts.

‡ Screen connected to plate.

• Subscript 2 indicates that grid current flows during some part of input cycle.

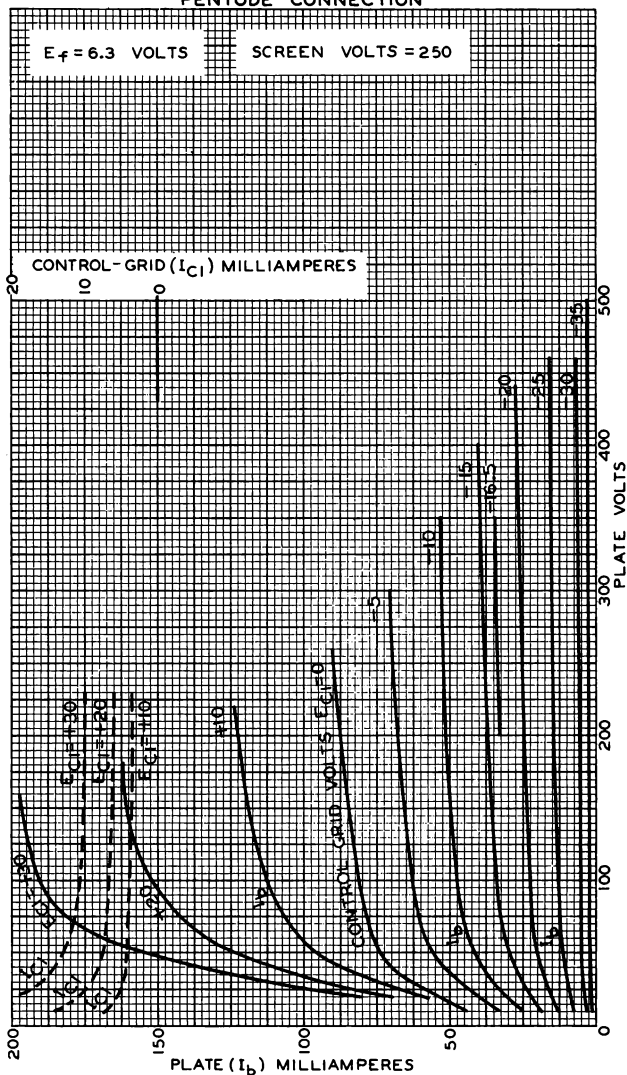
§ The value given for the cathode resistor is determined for a grid bias of -36.5 volts.

6F6



6F6

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



JULY 22, 1935

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

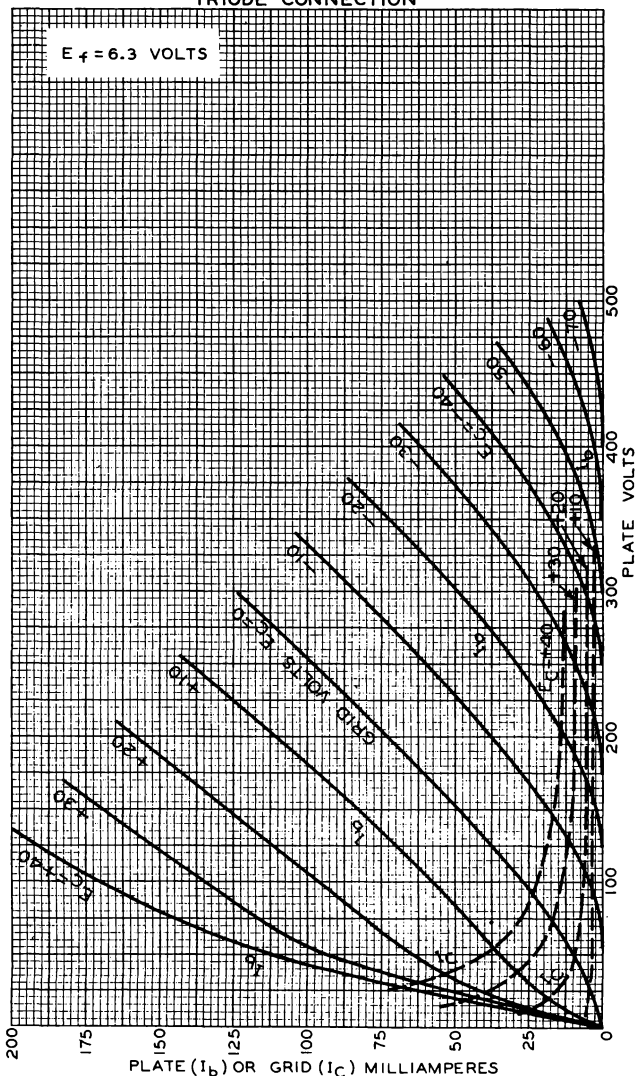
92C-4431



6F6

6F6

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



JULY 23, 1935

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C- 4440

6F6



6F6

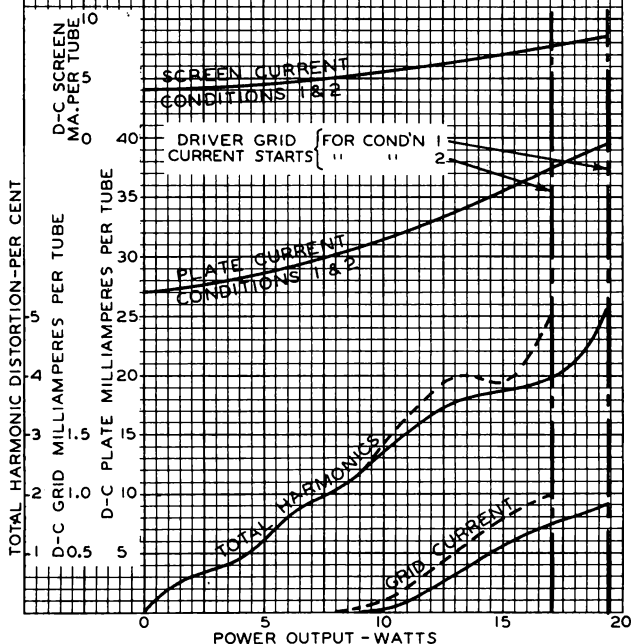
OPERATION CHARACTERISTICS PENTODE CONNECTION—CLASS AB OPERATION

 $E_f = 6.3 \text{ VOLTS}$

INPUT STAGE : CLASS A DRIVER—ONE TYPE 6F6 AS TRIODE
 PLATE VOLTS=250
 SELF-BIAS RESISTOR=650 OHMS
 OUTPUT STAGE : CLASS AB—TWO TYPE 6F6'S AS PENTODES
 ZERO-SIGNAL PLATE VOLTS=375, FROM
 SOURCE HAVING RESISTANCE (R_b)
 SHOWN IN TABLE
 ZERO-SIGNAL SCREEN VOLTS=250, FROM THE
 ABOVE 375-VOLT PLATE SUPPLY THROUGH
 RESISTANCE (R_d) SHOWN IN TABLE
 ZERO-SIGNAL BIAS VOLTS=VALUE FROM
 GRID—BIAS RESISTOR (R_c) OF 340 OHMS
 OUTPUT LOAD, PLATE TO PLATE=10000 OHMS

CONDI- TION	CURVE	R_b Ohms	R_d Ohms	DRIVER STAGE		INTERSTAGE TRANSFORMER	
				Input-Sig. Volts* (RMS)	Plate Load Ohms	Voltage Ratio Prim.:1/2 Sec.	Peak Power Efficiency %
1	—	0	0	14.6	51100	2.50:1	47.7
2	- - -	1000	2000	10.3	33100	1.74:1	54.4

* For maximum output



NOV. 21, 1935

 RCA RADIORON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-4517

RCA-6F7

TRIODE-PENTODE

Heater *	Coated Uni-potential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:		
Triode Unit:		
Grid to Plate	2.0	μuf
Grid to Cathode	2.5	μuf
Plate to Cathode	3.0	μuf
Pentode Unit:		
Grid to Plate	0.008 max. [⊙]	μuf
Input	3.2	μuf
Output	12.5	μuf
Overall Length	4-9/32" to 4-17/32"	
Maximum Diameter	1-9/16"	
Bulb	ST-12	
Cap	Small Metal	
Base	Small 7-Pin [△]	
Pin 1-Heater	(3)	Pin 5-Triode Grid
Pin 2-Pentode Plate	(4)	Pin 6-Cathode
Pin 3-Pentode Screen	(5)	Pin 7-Heater
Pin 4-Triode Plate	(6)	Cap -Pentode Grid
	(1)	
	(7)	

BOTTOM VIEW

AMPLIFIER SERVICE

	Triode Unit	Pentode Unit
Plate Voltage	100 max.	100 250 max. volts
Screen Voltage	-	100 max. volts
Grid Voltage	-3	-3 min. volts
Amp. Fact.	8	300 90C
Plate Res.	16000	290000 850000 ohms
Mut. Cond.	500	1050 1100 μmhos
Mut. Cond. at -35 volts bias	-	9 10 μmhos
Plate Cur.	3.5	6.3 ma.
Screen Cur.	-	1.6 1.5 ma.

CONVERTER SERVICE

	Triode Unit	Pentode Unit
Plate Voltage	100 max.	250 max. volts
Screen Voltage	-	100 max. volts
Grid Voltage	##	-3 min.* volts
Oscillator Plate Cur. (av.)	4 max.	- ma.
Typical Operation:		
Plate	100 [⊙]	250 volts
Screen	-	100 volts
Grid Bias	##	-10 [⊙] volts
Plate Resistance	-	2 megohms
Conversion Conductance	-	300 μmhos
D-c Plate Current	2.4	2.8 ma.
D-c Grid Current	0.15	0 ma.
Screen Current	-	0.6 ma.
Oscillator Peak Voltage Input	-	7 volts

Usually obtained by means of a grid leak.

** Grid bias should be at least .3 volts greater than the peak oscillator voltage applied to the pentode grid.

⊙ May be obtained from 250-volt source through 60000-ohm dropping resistor.

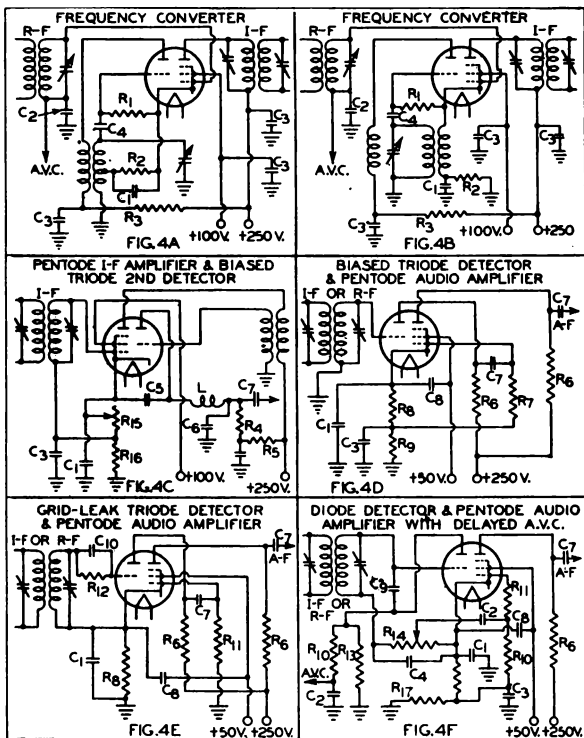
⊙ Obtained by means of 1700-ohm self-biasing (cathode) resistor.

* In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

△ Requires different socket than medium 7-pin base.

⊙ With shield-can.

TYPICAL CIRCUITS



APPROXIMATE VALUES

$C_1 = 5 \mu f$
 $C_2 = 0.05 \mu f$
 $C_3 = 0.1 \mu f$
 $C_4 = 0.0002 \mu f$
 $C_5 = 0.0024 \mu f$
 $C_6 = 0.00016 \mu f$
 $C_7 = 0.01 \mu f$
 $C_8 = 0.5 \mu f$
 $C_9 = 0.0005 \text{ TO } 0.001 \mu f$
 $C_{10} = 0.00025 \mu f$
 $L = \text{I-F CHOKE COIL}$
 $R_1 = \text{OSCILLATOR GRID LEAK}-0.1 \text{ MEGOHM}$

$R_2 = \text{PENTODE SELF-BIASING RESISTOR}-1500 \text{ OHMS}$
 $R_3 = \text{VOLTAGE DROPPING RESISTOR}-50000 \text{ OHMS}$
 $R_4 = \text{PLATE COUPLING RESISTOR}-170000 \text{ OHMS}$
 $R_5 = \text{FILTER RESISTOR}-30000 \text{ OHMS}$
 $R_6 = \text{PLATE COUPLING RESISTOR}-300000 \text{ OHMS}$
 $R_7 = \text{PENTODE GRID LEAK}-0.5 \text{ MEGOHM}$
 $R_8 = \text{PENTODE SELF-BIASING RESISTOR}-5000 \text{ OHMS}$
 $R_9 = 10000 \text{ OHMS. } R_9 + R_8 = \text{TRIODE BIASING RESISTOR}$
 $R_{10} = \text{FILTER RESISTOR}-1.0 \text{ MEGOHM}$
 $R_{11} = \text{GRID RESISTOR}-500000 \text{ OHMS}$
 $R_{12} = \text{TRIODE GRID LEAK}-1.0 \text{ MEGOHM}$
 $R_{13} = \text{A.V.C. DIODE LOAD}-1.0 \text{ MEGOHM}$
 $R_{14} = \text{A-F DIODE-LOAD POTENTIOMETER}-0.5 \text{ MEGOHM}$
 $R_{15} = \text{PENTODE SELF-BIASING RES.}-4000 \text{ OHMS VAR.}$
 $R_{16} = 1500 \text{ OHMS. } R_{16} + R_{15} = \text{TRIODE BIASING RESISTOR}$

The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.



RCA Radiotron

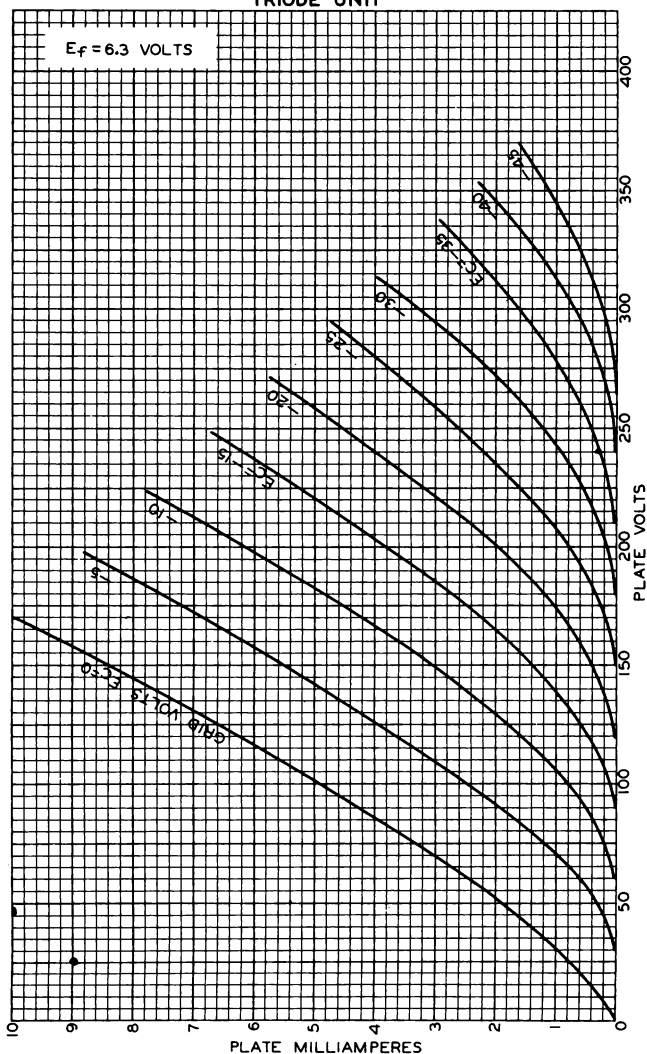
RCA-6F7

Cunningham
RADIO TUBES

C-6F7

6F7

AVERAGE PLATE CHARACTERISTICS
TRIODE UNIT



DEC. 5, 1933

925-5426

6F7



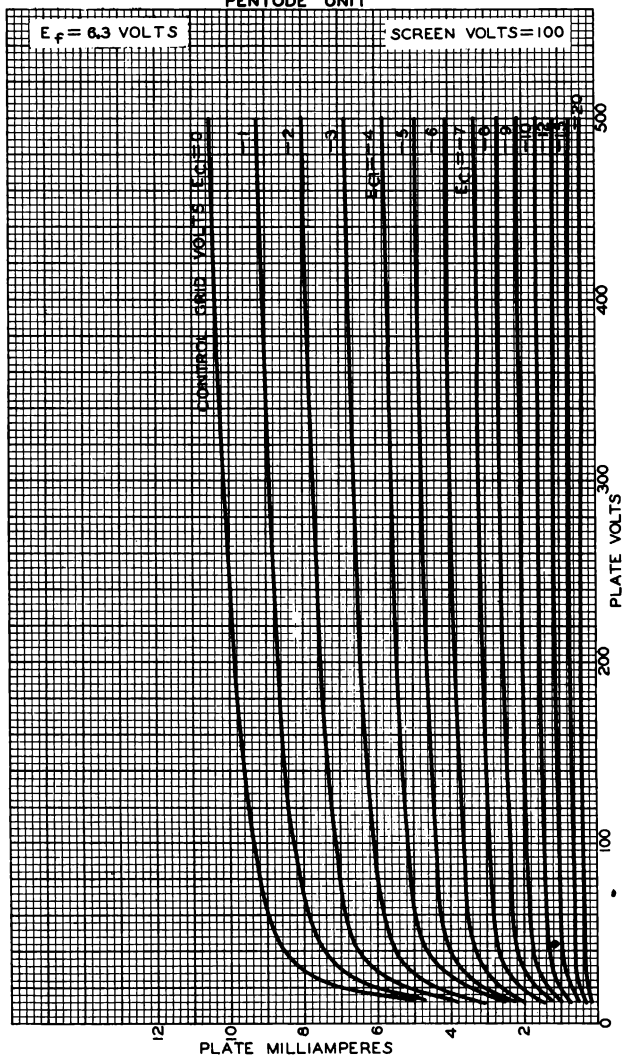
Radiotron

RCA-6F7

Cunningham
RADIO TUBES

C-6F7

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT





6F8-G

TWIN-TRIODE AMPLIFIER

Heater	Coated Unipotential Cathodes		
Voltage	6.3	a-c or d-c volts	
Current	0.6	amp.	
Direct Interelectrode Capacitances (Approx.): ^o			
	<u>Triode Unit T_1</u>	<u>Triode Unit T_2</u>	
Grid to Plate	3.8	3.2	μf
Grid to Cathode	3.2	1.9	μf
Plate to Cathode	1.0	1.9	μf
Maximum Overall Length	4-15/32"		
Maximum Seated Height	3-29/32"		
Maximum Diameter	1-9/16"		
Bulb	ST-12		
Cap	Skirted Miniature		
Base	Small Shell Octal 8-Pin		
Pin 1—No Connection		Pin 6—Plate T_1	
Pin 2—Heater		Pin 7—Heater	
Pin 3—Plate T_2		Pin 8—Cathode T_1	
Pin 4—Cathode T_2		Cap —Grid T_2	
Pin 5—Grid T_1			
Mounting Position	BOTTOM VIEW (G-8G)		Any

For convenience, one triode unit is identified as T_1 ; the other as T_2

Maximum And Minimum Ratings Are Design-Center Values

AMPLIFIER—Each Unit

Plate Voltage	300 max. volts
Grid Voltage	0 min. volts
Plate Dissipation	2.5 max. watts
Characteristics — Class A_1 Amplifier:	
Plate	90
Grid	0
Amp. Fact.	20
Plate Res.	6700
Transcond.	3000
Plate Cur.	10
	250 volts
	-8 volts
	20
	7700 ohms
	2600 μmhos
	9 ma.

Typical Operation with Resistance Coupling:

See RESISTANCE-COUPLED AMPLIFIER CHART.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- ° With no external shield.

Curves under Type 6J5 apply to each unit of the 6F8-G.

← Indicates a change.

Jan. 1, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



6G6-G

6G6-G

POWER AMPLIFIER PENTODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Direct Interelectrode Capacitances (Approx.):°		
Grid to Plate	0.5	μmf
Input	5.5	μmf
Output	7.0	μmf
Maximum Overall Length		4-1/8"
Maximum Seated Height		3-9/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Base	Small Shell Octal 7-Pin	
Pin 1-No Connection		Pin 5-Grid
Pin 2-Heater		Pin 7-Heater
Pin 3-Plate		Pin 8-Cathode
Pin 4-Screen		
Mounting Position	BOTTOM VIEW (G-7S)	Any

*Maximum Ratings Are Design-Center Values*AMPLIFIER - Pentode Connection

Plate Voltage	300 max. volts	
Screen Voltage	300 max. volts	←
Plate Dissipation	2.75 max. watts	
Screen Dissipation	0.75 max. watt	
D-C Heater-Cathode Potential	90 max. volts	←

Typical Operation and Characteristics— Class A₁ Amplifier:

Plate Voltage	135	180	volts
Screen Voltage	135	180	volts
Grid Voltage*	-6	-9	volts
Peak A-F Grid Voltage	6	9	volts
Zero-Sig. Plate Cur.	11.5	15	ma.
Zero-Sig. Screen Cur.	2	2.5	ma.
Plate Resistance	0.170	0.175	megohm
Transconductance	2100	2300	μmhos
Load Resistance	12000	10000	ohms
Total Harmonic Dist.	7.5	10	%
Max.-Sig. Power Output	0.6	1.1	watts

AMPLIFIER - Triode Connection[▲]

Plate Voltage	300 max. volts	←
Plate Dissipation	3.5 max. watts	←
D-C Heater-Cathode Potential	90 max. volts	←

Typical Operation and Characteristics — Class A₁ Amplifier:

Plate Voltage	180	volts
Grid Voltage*	-12	volts
Peak A-F Grid Voltage	12	volts
Amplification Factor	9.5	
Plate Resistance	4750	ohms
Transconductance	2000	μmhos
Plate Current	11	ma.

← Indicates a change.

°, ▲, *: See next page.

APRIL 1, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6G6-G



6G6-G

POWER AMPLIFIER PENTODE

(continued from preceding page)

Load Resistance	•	12000	ohms
Total Harmonic Distortion		5	%
Max.-Sig. Power Output		0.25	watt

° With no external shield.

* Under maximum rated conditions, the d-c resistance in the grid circuit may be as high as 0.5 megohm with cathode bias or 0.1 megohm with fixed bias.

▲ With screen connected to plate.

APRIL 1, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

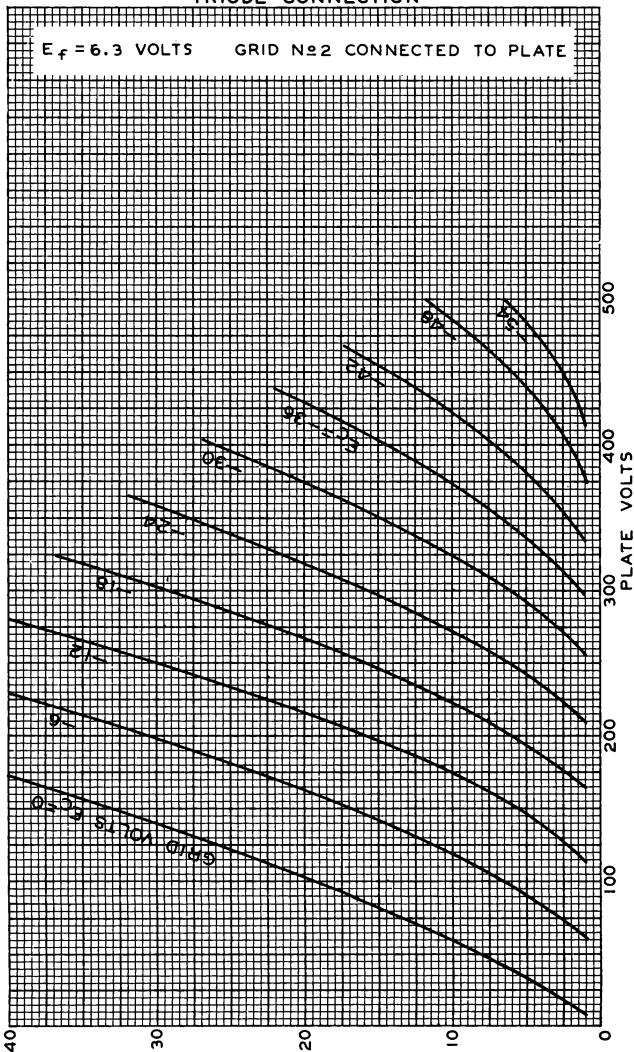


6G6-G

6G6-G

AVERAGE PLATE CHARACTERISTICS

TRIODE CONNECTION



AUG. 12, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

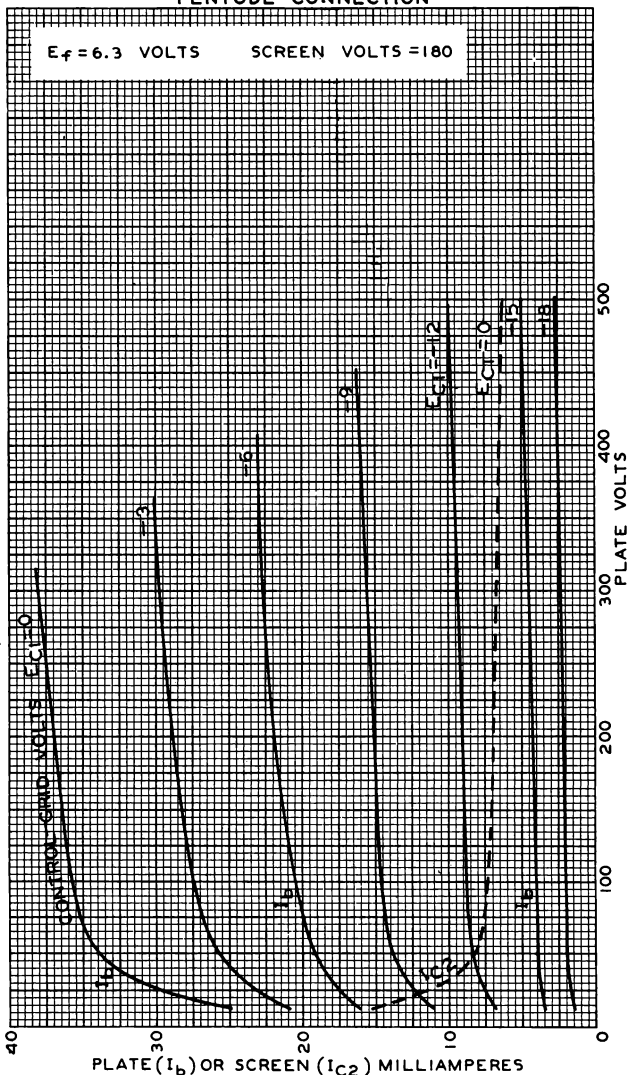
92CM-6122R1

6G6-G



6G6-G

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



AUG. 19, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4956R1



6H6, 6H6-GT/G

6H6
6H6-GT/G

TWIN DIODE

Heater	Coated Unipotential Cathodes	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Cap. ^o	6H6	6H6-GT/G
Plate #1 to Cathode #1	3.0	3.0 μ f
Plate #2 to Cathode #2	3.4	4.0 μ f
Plate #1 to Plate #2	0.10 max.	0.10 max. μ f
Maximum Overall Length	1-3/4"	3-5/16"
Maximum Seated Height	1-3/16"	2-3/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell MT-8	T-9
Base	{ Small Wafer Octal 7-Pin	{ Intermed. Shell Octal 7-Pin
Basing Designation	7Q	G-7Q
Pin 1 { 6H6, Shell 6H6-GT/G, Internal shield		Pin 4 - Cathode #2
Pin 2 - Heater		Pin 5 - Plate #1
Pin 3 - Plate #2		Pin 7 - Heater
RCA Socket		Pin 8 - Cathode #1
Mounting Position		Stock No. 9924 Any

BOTTOM VIEW

Maximum Ratings Are Design-Center Values

RECTIFIER OR DOUBLER	
Peak Inverse Voltage	420 max. volts
Peak Plate Current per Plate	48 max. ma.
D-C Heater-Cathode Potential	330 max. volts
<i>As Half-Wave Rectifier: *</i>	
A-C Plate Voltage per Plate (RMS)	117 150 max. volts
Total Effect. Plate-Supply Impedance per Plate [▲]	15 min. 40 min. ohms
D-C Output Current per Plate	8 max. 8 max. ma.
<i>As Voltage Doubler:</i>	
	Half-Wave Full-Wave
A-C Plate Voltage per Plate (RMS)	117 117 volts
Total Effect. Plate-Supply Impedance per Plate [▲]	30 min. 15 min. ohms
D-C Output Current	8 max. 8 max. ma.

^o With shell or external and internal shields connected to cathodes.
^{*} In half-wave service, the two units may be used separately or in parallel.
[▲] When a filter-input condenser larger than 40 μ f is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.

Circuits for the 6H6 and 6H6-GT/G are the same as those shown under Type 2525.

← Indicates a change.

AUG. 1, 1942

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

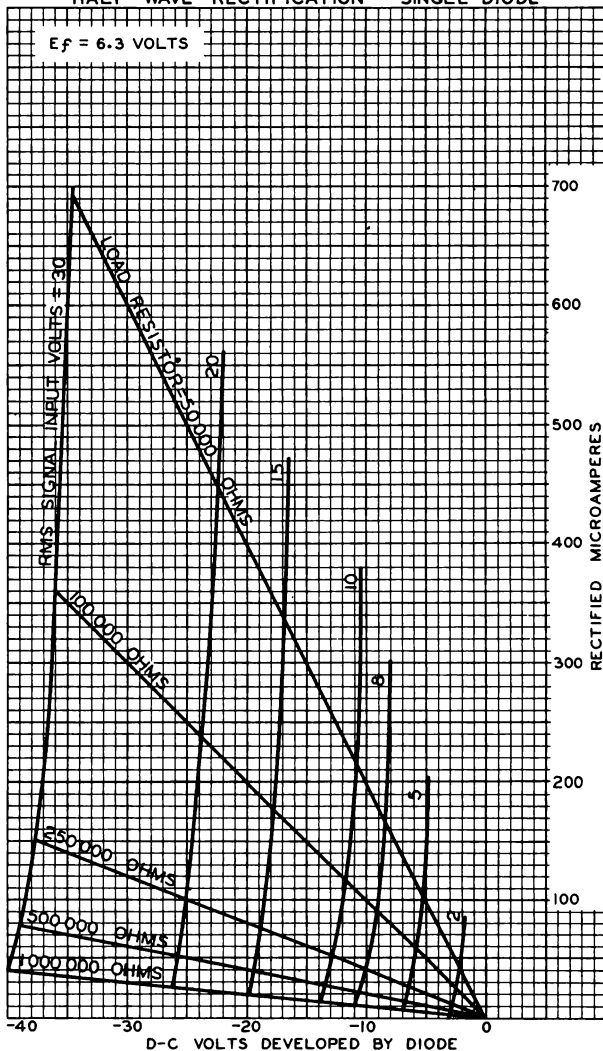
6H6



6H6

AVERAGE CHARACTERISTICS HALF-WAVE RECTIFICATION - SINGLE DIODE

$E_f = 6.3$ VOLTS



JULY 26, 1935

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4446



6J5, 6J5-GT MEDIUM-MU TRIODE

6J5
6J5-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	6.3	ac or dc volts
Current.	0.3	amp

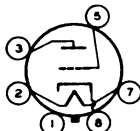
	6J5	6J5-GT	
Direct Interelectrode Cap. (Approx.):	-	▲▲	
Grid to Plate.	3.4	3.8	μf
Grid to Cathode.	3.4	4.2	μf
Plate to Cathode	3.6	5.0	μf

▲▲ With No. 308 shield connected to cathode.

Mechanical:

Mounting Position.	Any	Any
Maximum Overall Length	2-5/8"	3-5/16"
Maximum Seated Height.	2-1/16"	2-3/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell, MT8G	T-9
Base	{ Small-Wafer Octal 6-Pin	{ Sm.-Wafer Octal 6-Pin, Sleeve GT-6Q
Basing Designation for BOTTOM VIEW 6Q		

Pin 1 { 6J5, Shell
6J5-GT, Base
Sleeve
Pin 2-Heater



Pin 3-Plate
Pin 5-Grid
Pin 7-Heater
Pin 8-Cathode

AMPLIFIER- Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID VOLTAGE	0 max.	volts
CATHODE CURRENT.	20 max.	ma
PLATE DISSIPATION.	2.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage.	90	250	volts
Grid Voltage	0	-8	volts
Amplification Factor	20	20	-
Plate Resistance	6700	7700	ohms
Transconductance	3000	2600	μmhos
Plate Current.	10	9	ma

SEPT. 1, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6J5
6J5-GT



6J5, 6J5-GT MEDIUM-MU TRIODE

Maximum Circuit Values:

Grid-Circuit Resistance. 1.0 max. megohm

Typical Operation as Resistance-Coupled Amplifier:

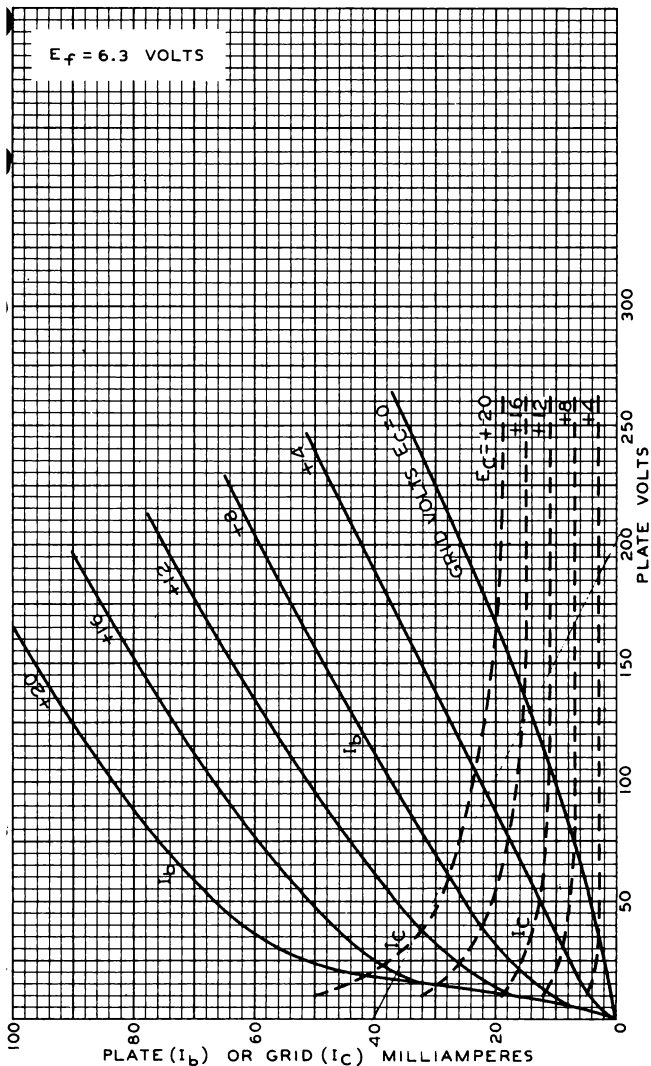
*See RESISTANCE-COUPLED AMPLIFIER CHART
at the front of this Section.*



6J5

6J5

AVERAGE PLATE CHARACTERISTICS



AUG. 10, 1943

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

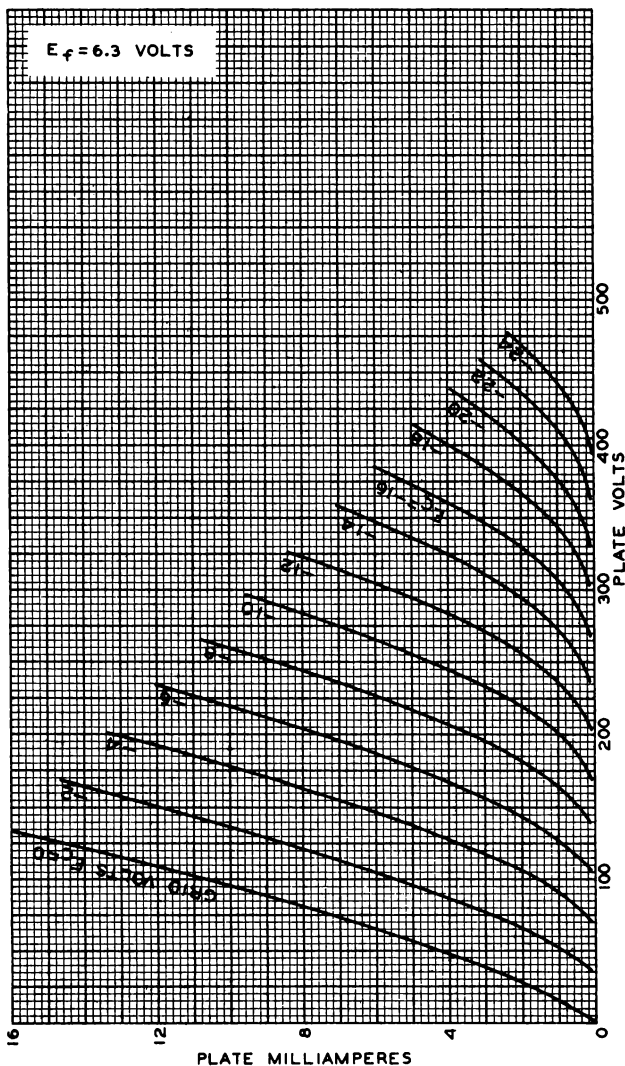
92CM-6448

6J5



6J5

AVERAGE PLATE CHARACTERISTICS



APRIL 27, 1943

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4771R1



6J6

6J6

MEDIUM-MU TWIN TRIODE

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater for Unipotential Cathode:

Voltage. 6.3 ac or dc volts
 Current. 0.45 amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
<i>Unit No. 1</i>			
Grid to plate.	1.6	1.5	$\mu\mu\text{f}$
Grid to cathode and heater	2.2	2.6	$\mu\mu\text{f}$
Plate to cathode and heater	0.4	1.6	$\mu\mu\text{f}$
<i>Unit No. 2</i>			
Grid to plate.	1.6	1.5	$\mu\mu\text{f}$
Grid to cathode and heater	2.2	2.6	$\mu\mu\text{f}$
Plate to cathode and heater	0.4	1.0	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier (Each Unit):

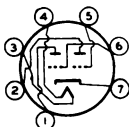
Plate Voltage.	100	volts
Cathode-Bias Resistor [■]	50 $\blacklozenge$	ohms
Amplification Factor	38	
Plate Resistance	7100	ohms
Transconductance	5300	μmhos
Plate Current.	8.5	ma

Mechanical:

Mounting Position.	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length.	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip).	1-1-2" $\pm$ 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No. E7-1)

Basing Designation for BOTTOM VIEW 7BF

- Pin 1 - Plate of
Unit No. 2
Pin 2 - Plate of
Unit No. 1
Pin 3 - Heater
Pin 4 - Heater



- Pin 5 - Grid of
Unit No. 1
Pin 6 - Grid of
Unit No. 2
Pin 7 - Cathode

^o With external shield JETEC No. 316 connected to cathode.[■] Fixed-bias operation is not recommended. $\blacklozenge$ Value is for both units operating at the specified conditions.

← Indicates a change.

MAR. 1, 1955

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6J6



6J6

MEDIUM-MU TWIN TRIODE

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID VOLTAGE:		
Positive bias value.	0 max.	volts
PLATE DISSIPATION.	1.5 max.	watts
→ PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	100 max.	volts
Heater positive with respect to cathode.	100 max.	volts

Maximum Circuit Values (For maximum rated conditions):

Grid-Circuit Resistance:		
For cathode-bias operation	0.5 max.	megohm

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation

Values are for Each Unit

Maximum Ratings, Design-Center Values:

DC PLATE VOLTAGE	300 max.	volts
DC GRID VOLTAGE:		
Negative bias value.	-40 max.	volts
→ Positive bias value.	0 max.	volts
DC PLATE CURRENT	15 max.	ma
DC GRID CURRENT.	8 max.	ma
DC PLATE INPUT	4.5 max.	watts
PLATE DISSIPATION.	1.5 max.	watts
→ PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	100 max.	volts
Heater positive with respect to cathode.	100 max.	volts

Typical Push-Pull Operation at Frequencies up to 50 Mc:*

Values are for Both Units

DC Plate Voltage	150	volts
DC Grid Voltage:		
From a fixed supply of	-10	volts
From a grid resistor of.	625	ohms
From a cathode resistor of	220	ohms
DC Plate Current	30	ma
DC Grid Current (Approx.)*	16	ma
Driving Power (Approx.)*	0.35	watt
Useful Power Output (Approx.).	3.5	watts

* Approximately 1.0 watt can be obtained when the 6J6 is used at 250 Mc as a push-pull oscillator with a plate voltage of 150 volts, with maximum rated plate dissipation, and with a grid resistor of 2000 ohms common to both units.

* For effect of load resistance on grid current and driving power, refer to **TUBE RATINGS-Grid Current and Driving Power** in the General Section.

→ Indicates a change.

MAR. 1, 1955

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

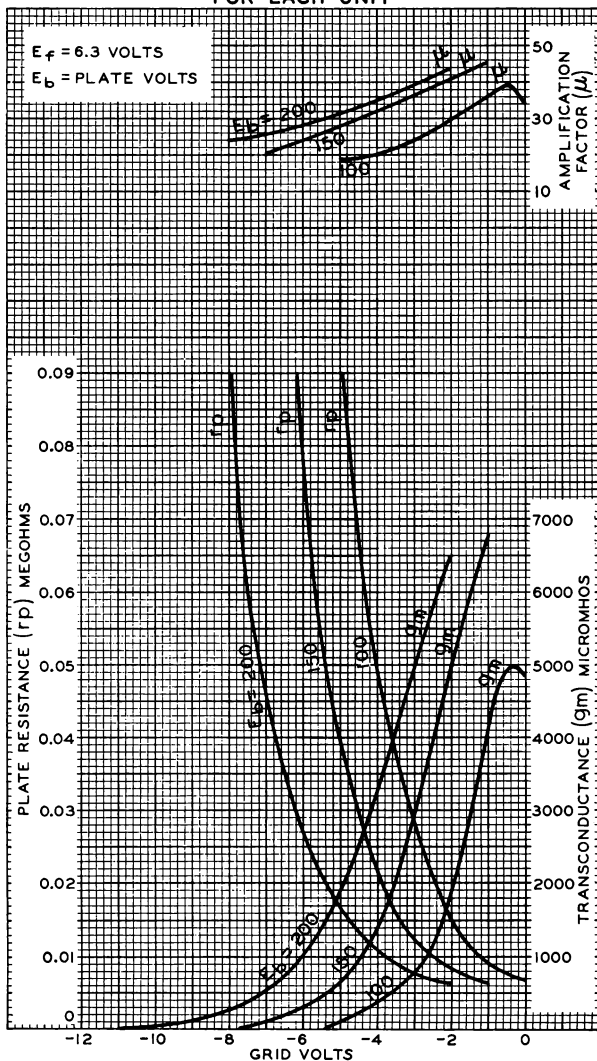
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6J6

AVERAGE CHARACTERISTICS FOR EACH UNIT

6J6



JUNE 28, 1951

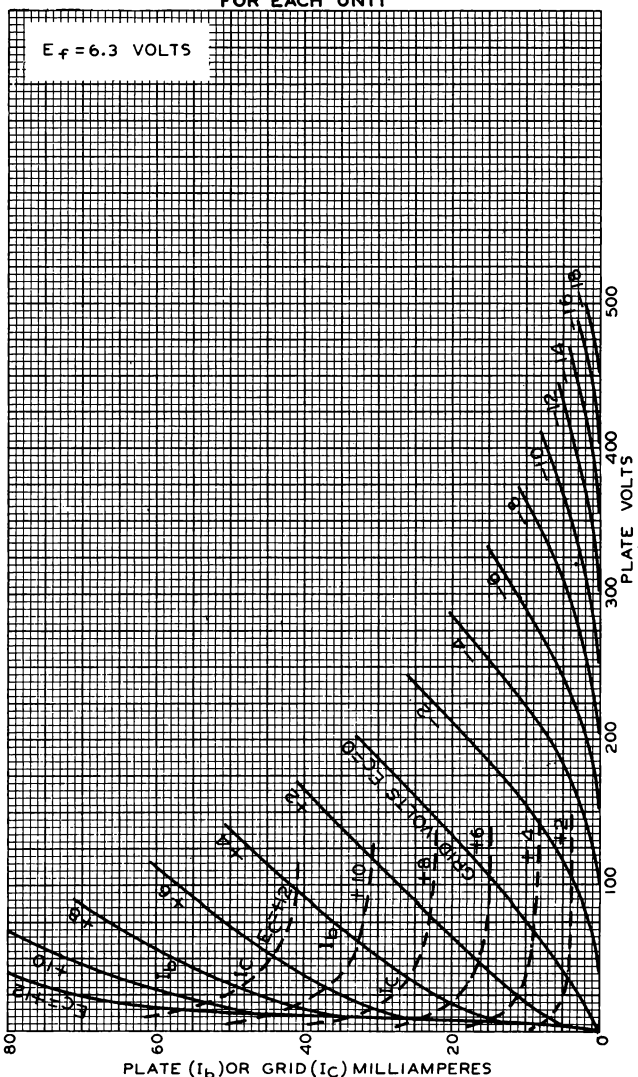
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7672



6J6

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



OCT. 21, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

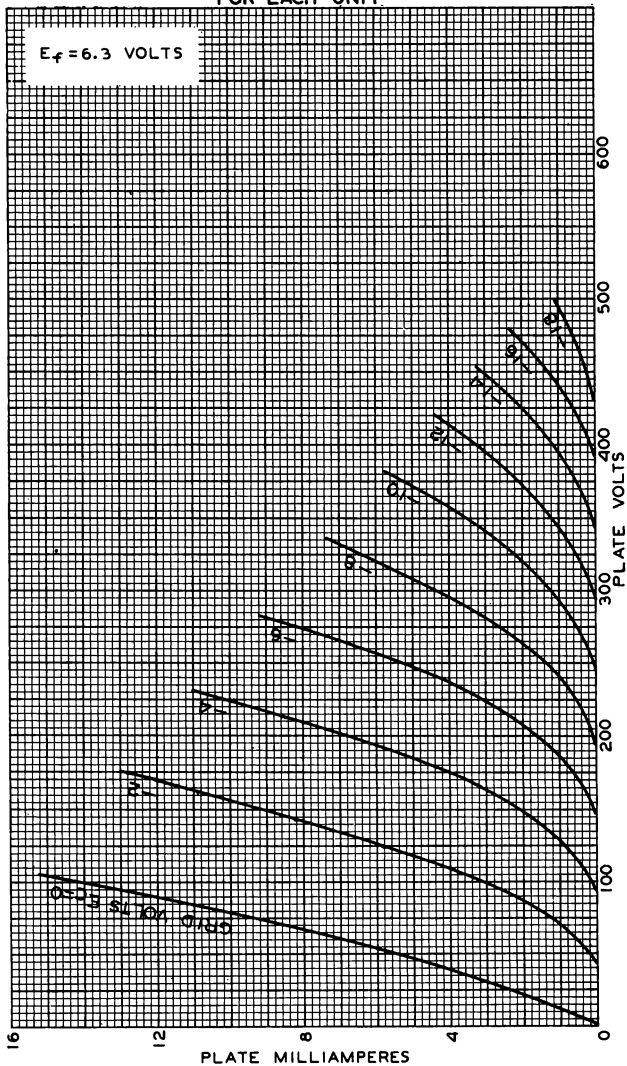
92CM-6403RI

6J6



6J6

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



SEPT. 20, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6402RI



6J7, 6J7-G, 6J7-GT SHARP-CUTOFF PENTODE

6J7
6J7-G
6J7-GT

Cathode-Bias Resistor.	18000	10000	3000	10000	ohms
Zero-Sig. Cathode Cur.	0.063	0.183	0.65	0.43	ma
Plate Resistor	1.0	0.25	0.25	0.5	megohm
Blocking Capacitor . .	0.01	0.01	0.3	0.3	μ f
Grid Resistor [®]	1.0	0.5	0.25	0.25	megohm

Maximum Circuit Values:

Grid-No.1-Circuit Resistance 1 max. megohm

* Greater than 1 megohm.

♦ Voltage at plate will be "Plate-Supply" voltage minus voltage drop in plate resistor caused by plate current.

★ With these signal values modulated 20%, the voltage output under each set of conditions is 17 peak volts at the grid of the following amplifier. This value is sufficient to insure full audio output from a 6F6 (class A pentode) at 250 volts on plate.

® For the following amplifier tube.

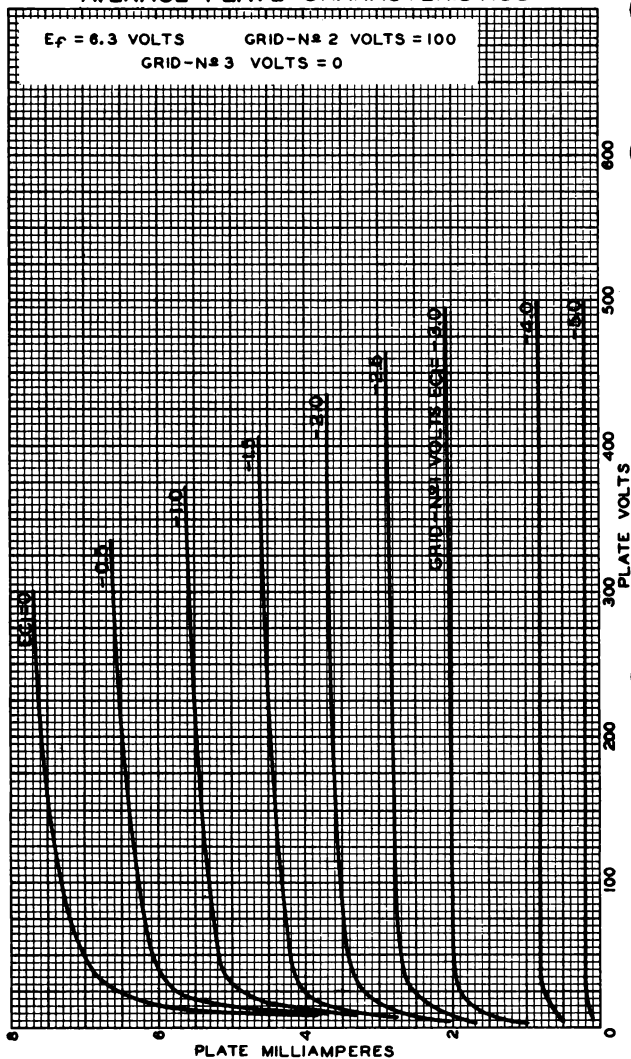
For additional data, see RESISTANCE-COUPLED AMPLIFIER CHARTS at the front of this Section.

6J7



6J7

AVERAGE PLATE CHARACTERISTICS



MAY 12, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

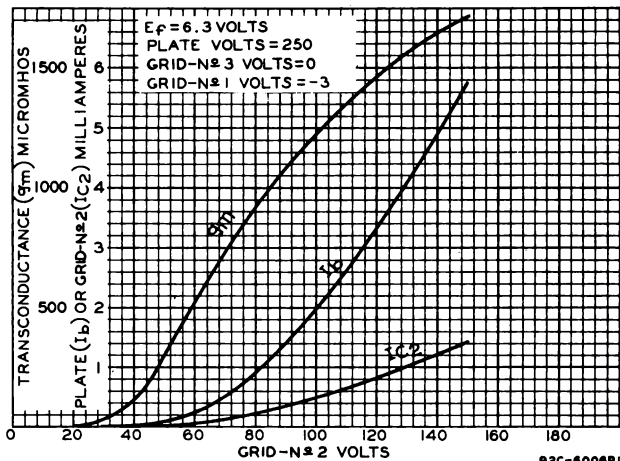
92CM-4741R2



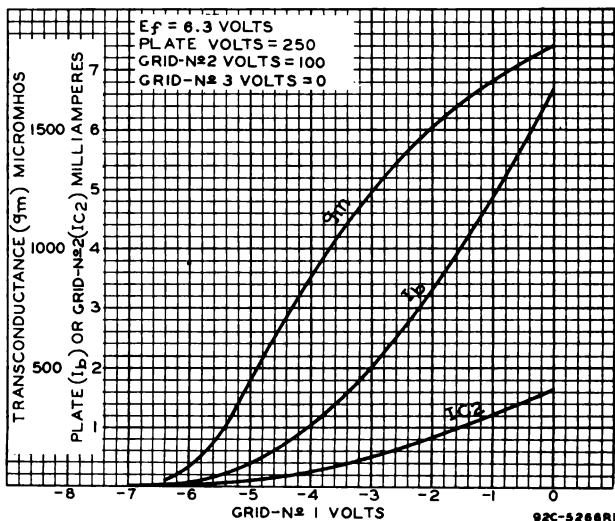
6J7

6J7

AVERAGE CHARACTERISTICS



AVERAGE CHARACTERISTICS



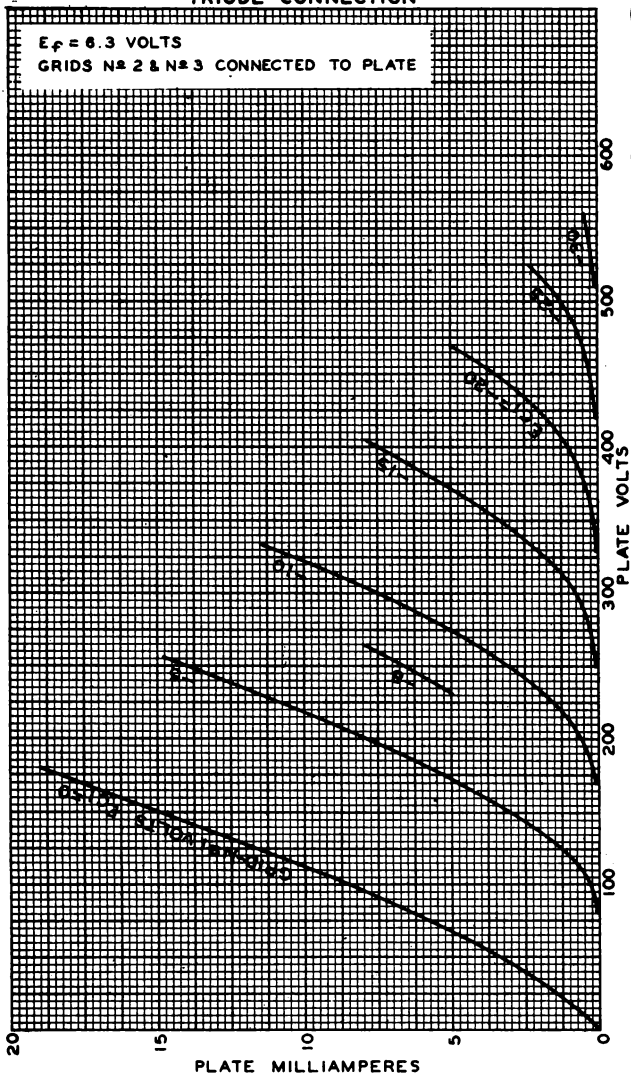
MAY 18, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6007R1

6J7

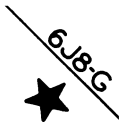
AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



MAY 11, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4842RI



TRIODE-HEPTODE CONVERTER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:		
Heptode Grid #1 to Heptode Plate*	0.01	max. $\mu\mu f$
Heptode Grid #1 to Triode Plate*	0.015	max. $\mu\mu f$
Heptode Grid #1 to Triode Grid #3	0.13	$\mu\mu f$
Heptode Grid #3 to Triode Grid to Triode Plate	2.2	$\mu\mu f$
Heptode Grid #1 to All Other Electrodes (R-F Input)	4.4	$\mu\mu f$
Triode Plate to All Other Electrodes (Osc. Output)	5.5	$\mu\mu f$
Triode Grid & Heptode Grid #3 to All Other Electrodes (Osc. Input)	11.7	$\mu\mu f$
Heptode Plate to All Other Electrodes (Mixer Output)	8.8	$\mu\mu f$
Overall Length	4-7/32" to 4-15/32"	
Seated Height	3-21/32" to 3-29/32"	
Maximum Diameter	1-9/16"	
Bulb	ST-12	
Cap	Skirted Miniature	
Base	Small Shell Octal 8-Pin	
Pin 1 - No Connection	Pin 5 - Triode Grid #3	
Pin 2 - Heater	Heptode Grid #3	
Pin 3 - Heptode Plate	Pin 6 - Triode Plate	
Pin 4 - Heptode Grids #2 & #4	Pin 7 - Heater	
	Pin 8 - Cathode	
Mounting Position	BOTTOM VIEW (G-8H)	Any
<u>CONVERTER SERVICE</u>		
Heptode Plate Voltage	250 max.	volts
Heptode Screen (Grids #2 & #4) Voltage	100 max.	volts
Triode Plate Supply Voltage*	250 max.	volts
<u>Typical Operation and Characteristics:</u>		
Heptode Plate Voltage	100	250 volts
Heptode Screen Voltage	100	100 volts
Heptode Control-Grid Voltage (Grid #1)	-3	-3 volts
Triode Plate Voltage	100	- volts
Triode Plate Supply Voltage*	-	250 volts
Triode Grid Resistor	50000	50000 ohms
Heptode Plate Resistance	0.9	4.0 approx. megohms
Conversion Transconductance	250	290 μmhos
Heptode Control-Grid Bias for Conversion Transcond. of 2 μmhos	-	-20 volts
Heptode Plate Current	1.4	1.3 ma.
Heptode Screen Current	3.0	2.9 ma.
Triode Plate Current	3.0	5.0 ma.
Triode Grid & Heptode Grid #3 Current	0.3	0.4 ma.
NOTE: The transconductance of the triode unit (not oscillating) is approximately 1600 μmhos under the following conditions: triode plate volts, 150; triode grid volts, -3.		
■ In circuits where the cathode is not connected directly to the heater, the potential difference between heater and cathode should be kept as low as possible.		
● With shield-can connected to cathode.		
* Applied through 20000-ohm dropping resistor.		

July 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

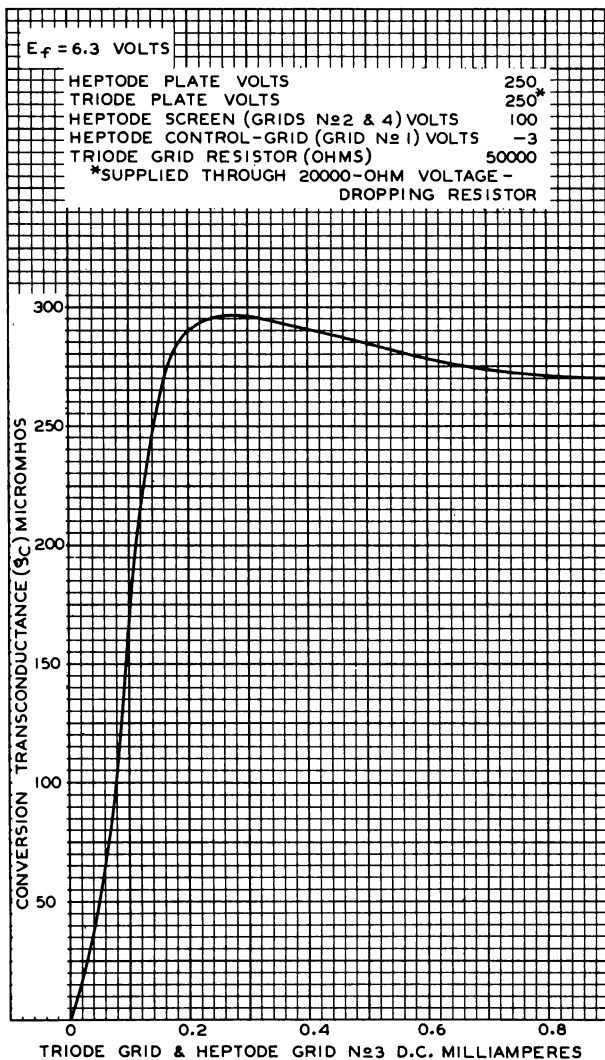
TENTATIVE DATA

6J8-G



6J8-G

OPERATION CHARACTERISTIC



MAY 13, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6285



6K6-GT POWER PENTODE

6K6-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts
Current. 0.4 amp

Direct Interelectrode Capacitances (Approx.):⁰

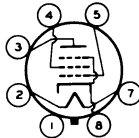
Grid No.1 to Plate 0.5 $\mu\mu\text{f}$
Input. 5.5 $\mu\mu\text{f}$
Output 6.0 $\mu\mu\text{f}$

⁰ With no external shield.

Mechanical:

Mounting Position. Any
Maximum Overall Length 3-5/16"
Maximum Seated Length. 2-3/4"
Maximum Diameter 1-9/32"
Bulb T-9
Base Intermediate-Shell Octal 7-Pin (JETEC No. B7-7)
Basing Designation for BOTTOM VIEW G-7S

Pin 1-No
Connection
Pin 2-Heater
Pin 3-Plate
Pin 4-Grid No.2



Pin 5-Grid No.1
Pin 7-Heater
Pin 8-Cathode,
Grid No.3

SINGLE-TUBE AMPLIFIER

Pentode Connection

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 315 max. volts
GRID-No.2 (SCREEN) VOLTAGE 285 max. volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:
Positive bias value. 0 max. volts
PLATE DISSIPATION. 8.5 max. watts
GRID-No.2 INPUT. 2.8 max. watts
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode. . . 90 max. volts
Heater positive with respect to cathode. . . 90 max. volts

Typical Operation and Characteristics--Class A₁ Amplifier:

Plate Voltage.	100	250	315	volts
Grid-No.2 Voltage.	100	250	250	volts
Grid-No.1 Voltage.	-7	-18	-21	volts
Peak AF Grid-No.1 Voltage.	7	18	21	volts
Zero-Sig. Plate Current.	9	32	25.5	ma
Max.-Sig. Plate Current.	9.5	33	28	ma

*:See next page.

← Indicates a change

OCTOBER 1, 1951

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1

6K6-GT



6K6-GT POWER PENTODE

Zero-Sig. Grid-No.2 Cur.	1.6	5.5	4	ma
Max.-Sig. Grid-No.2 Cur.	3	10	9	ma
→ Plate Resistance (Approx.)	104000	90000	110000	ohms
Transconductance	1500	2300	2100	μmhos
Load Resistance.	12000	7600	9000	ohms
Total Harmonic Distortion.	11	11	15	%
Max.-Sig. Power Output	0.35	3.4	4.5	watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias	0.1 max.	megohm
For cathode bias	0.5 max.	megohm

SINGLE-TUBE AMPLIFIER

Triode Connection--Grid No.2 Connected to Plate

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	315 max.	volts
TOTAL PLATE AND GRID-No.2 DISSIPATION	6 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Typical Operation and Characteristics--Class A₁ Amplifier:

Plate Voltage.	315	volts
Grid-No.1 (Control-Grid) Voltage	-37.5	volts
Peak AF Grid-No.1 Voltage.	37.5	volts
Zero-Signal Plate Current.	18.5	ma
Max.-Signal Plate Current.	22	ma
Amplification Factor	5.7	
Plate Resistance (Approx.)	4700	ohms
Transconductance	1200	μmhos
Load Resistance.	13000	ohms
Total Harmonic Distortion.	10	%
Max.-Signal Power Output	1.2	watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias	0.1 max.	megohm
For cathode bias	0.5 max.	megohm

PUSH-PULL AMPLIFIER

Pentode Connection

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	315 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	285 max.	volts
→ GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value.	0 max.	volts

→ Indicates a change

OCTOBER 1, 1951

DATA 1

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6K6-GT POWER PENTODE

6K6-GT

PLATE DISSIPATION.	8.5 max.	watts	
GRID-No. 2 INPUT.	2.8 max.	watts	
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	90 max.	volts	←
Heater positive with respect to cathode.	90 max.	volts	

Typical Operation--Class A₁ Amplifier:

Values are for 2 tubes

	Fixed Bias	Cathode Bias	
Plate Voltage.	285	285	volts
Grid-No. 2 Voltage.	285	285	volts
Grid-No. 1 Voltage.	-25.5	-	volts
Cathode Resistor	-	400	ohms
Peak AF Grid-No. 1-to-			
Grid-No. 1 Voltage.	51	51	volts
Zero-Signal Plate Current. . .	55	55	ma
Max.-Signal Plate Current. . .	72	61	ma
Zero-Signal Grid-No. 2 Current.	9	9	ma
Max.-Signal Grid-No. 2 Current.	17	13	ma
Effective Load Resistance			
(Plate-to-plate)	12000	12000	ohms
Total Harmonic Distortion. . .	6	4	%
Max.-Signal Power Output . . .	10.5	9.8	watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No. 1-Circuit Resistance:		
For fixed bias	0.1 max.	megohm
For cathode bias	0.5 max.	megohm

VERTICAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system*

DC PLATE VOLTAGE	350 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^o . . .	1500 max.	volts
DC GRID-No. 1 (CONTROL-GRID) VOLTAGE. . .	-50 max.	volts
PEAK NEGATIVE-PULSE GRID-No. 1 VOLTAGE	-200 max.	volts
DC CATHODE CURRENT	20 max.	ma
PLATE DISSIPATION.	7 max.	watts

Circuit Values:

Grid-No. 1-Circuit Resistance:		
For cathode bias	2.2 max.	megohms
Cathode-Bias Resistor.	330 min.	ohms

* As described in "Standards of Good Engineering Practice for Television Broadcast Stations", Federal Communications Commission.

^o The duration of the voltage pulse must not exceed 15 per cent of one scanning cycle. In a 525-line, 30-frame system, 15 per cent of one scanning cycle is 2.5 milliseconds.

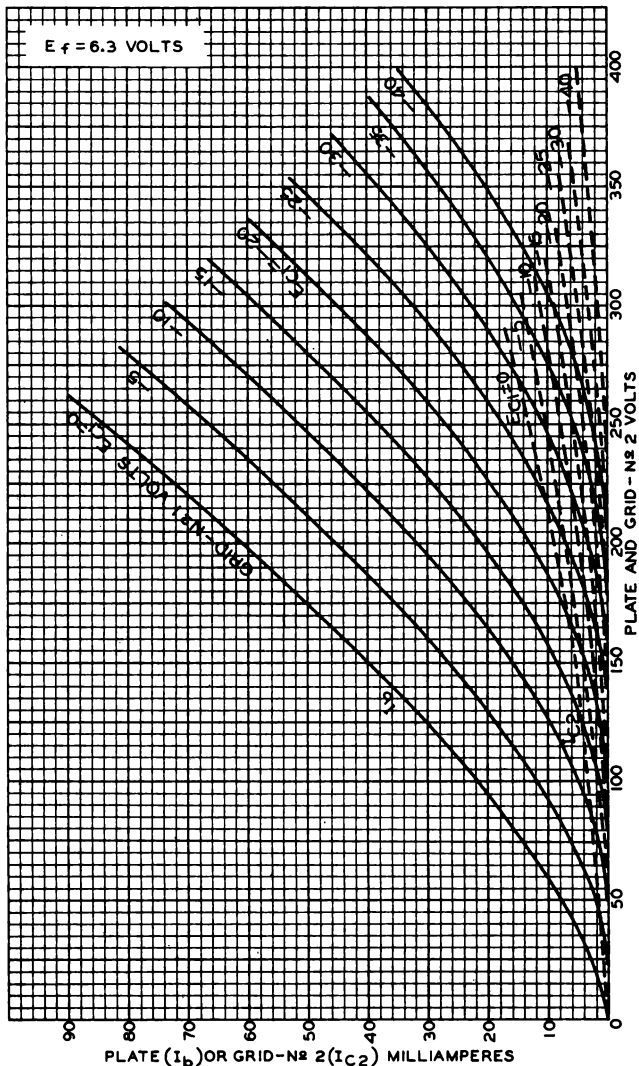
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6K6-GT



6K6-GT

AVERAGE CHARACTERISTICS



SEPT. 24, 1951

TUBE DEPARTMENT

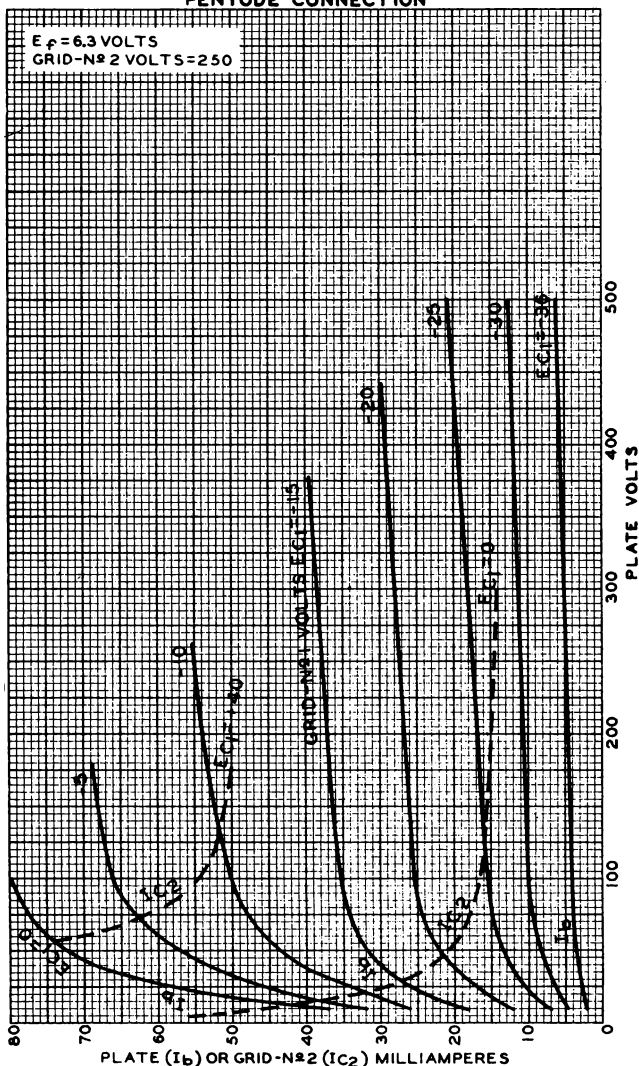
92CM-5209R2

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6K6-GT

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



FEB. 13, 1948

TUBE DEPARTMENT

92CM-4881R2

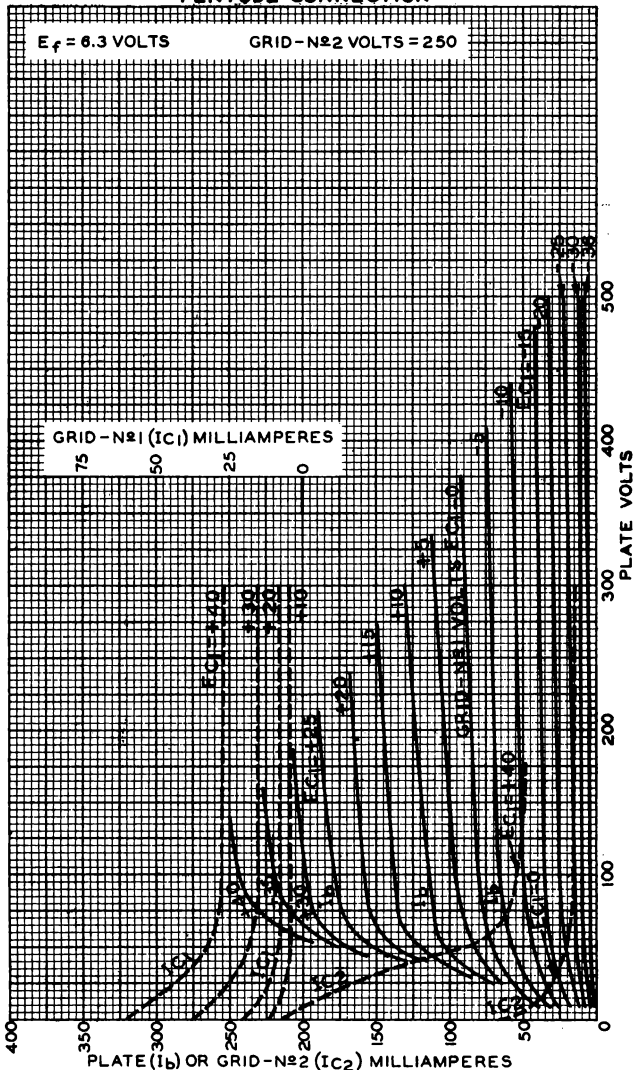
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6K6-GT



6K6-GT

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



FEB. 13, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

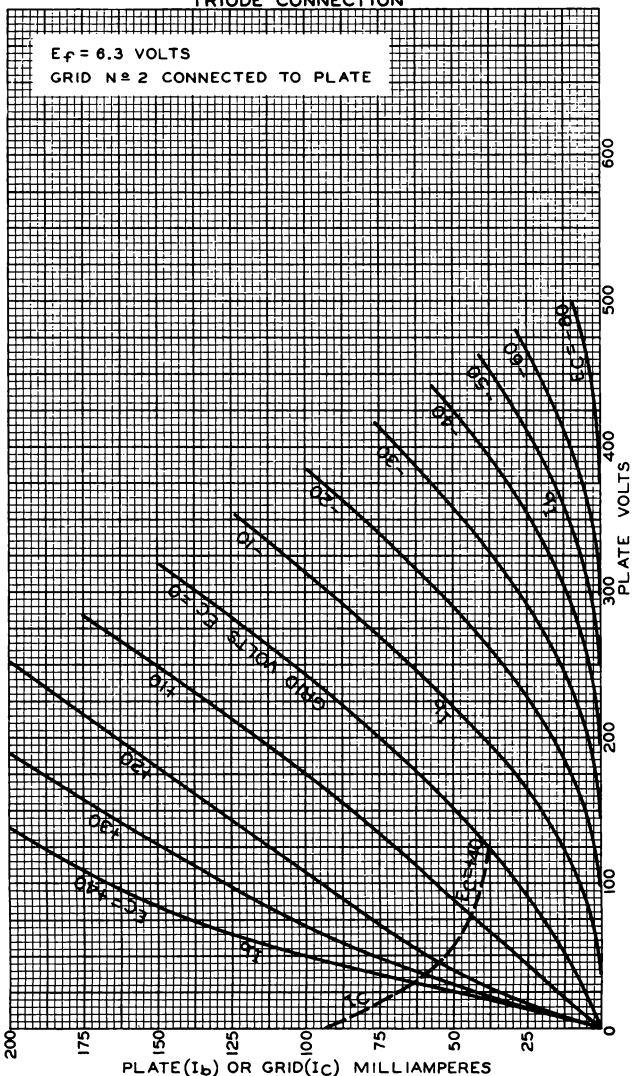
92CM-6311R1



6K6-GT

6K6-GT

AVERAGE PLATE CHARACTERISTICS
TRIODE CONNECTION



AUG. 18, 1941

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

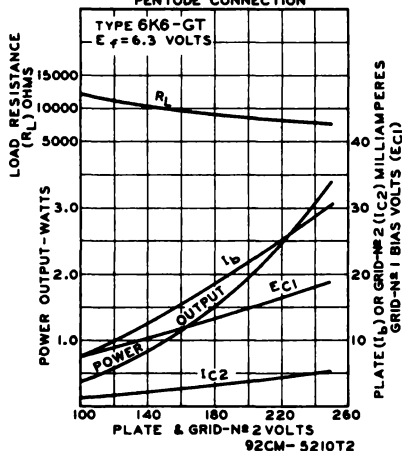
92CM-6313

6K6-GT

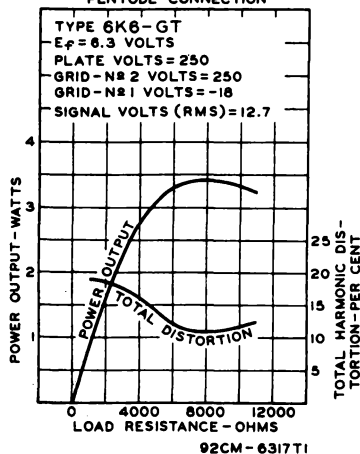


6K6-GT POWER PENTODE

OPERATION CHARACTERISTICS PENTODE CONNECTION



OPERATION CHARACTERISTICS PENTODE CONNECTION



OCTOBER 1, 1951

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-5210T2 - 6317T1



6K7, 6K7-G, 6K7-GT



TRIPLE-GRID SUPER-CONTROL AMPLIFIER

Heater	Coated Unipotential Cathode		
Voltage	6.3	a-c or d-c volts	
Current	0.3	amp.	
	6K7	6K7-G	6K7-GT
Direct Interelectrode Cap.	▲	▲▲	▲▲
Grid to Plate	0.005	0.007	0.005 μmf
Input	7	5	4.6 μmf
Output	12	12	12 μmf
Overall Length	{ 3-1/8" max.	{ 4-7/32" to 4-15/32"	3-5/16" max.
Seated Height	{ 2-9/16" max.	{ 3-21/32" to 3-29/32"	2-3/4" max.
Maximum Diameter	1-5/16"	1-9/16"	1-5/16"
Bulb	Metal Shell, MT-8	ST-12	T-9
Cap	Miniature	{ Skirted Min. Style C	{ Skirted Min. Style C
Base	{ Small Wafer Octal 7-Pin	{ Small Shell Octal 7-Pin	{ Sm. Wafer Octal 7-Pin, Sleeve
Basing Designation	7R	G-7R	GT-7R
Pin 1	{ 6K7, Shell	Pin 4 - Screen	
	{ 6K7-G, No Con.	Pin 5 - Suppressor	
	{ 6K7-GT, Base Sleeve	Pin 7 - Heater	
Pin 2 - Heater		Pin 8 - Cathode	
Pin 3 - Plate		Cap - Grid	
Mounting Position	Any		Any



BOTTOM VIEW

AMPLIFIER

Plate Voltage	300 max.	volts		
Screen Voltage	125 max.	volts		
Screen Supply Voltage	300 max.	volts		
Grid Voltage	0 min.	volts		
Plate Dissipation	2.75 max.	watts		
Screen Dissipation	0.35 max.	watt		
Typical Operation and Characteristics - Class A ₁ Amplifier:				
Plate	100	250	250	volts
Screen	100	100	125	volts
Grid	-1	-3	-3	volts
Suppressor	Connected to cathode at socket			
Plate Res.	0.15	0.8	0.6	approx. megohm
Transcond.	1650	1450	1650	μmos
Grid Bias for transcond.				
of approx. 2 μmos	-38.5	-42.5	-52.5	volts
Plate Cur.	9.5	7.0	10.5	ma.
Screen Cur.	2.7	1.7	2.6	ma.

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ with shell connected to cathode.

▲▲ With close-fitting shield connected to cathode. The internal shield in the dome is connected to cathode within 6K7-G and 6K7-GT.

Curves under type 78 also apply to the 6K7, 6K7-G, and 6K7-GT.

← Indicates a change.

← Indicates a change.

Sept. 2, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

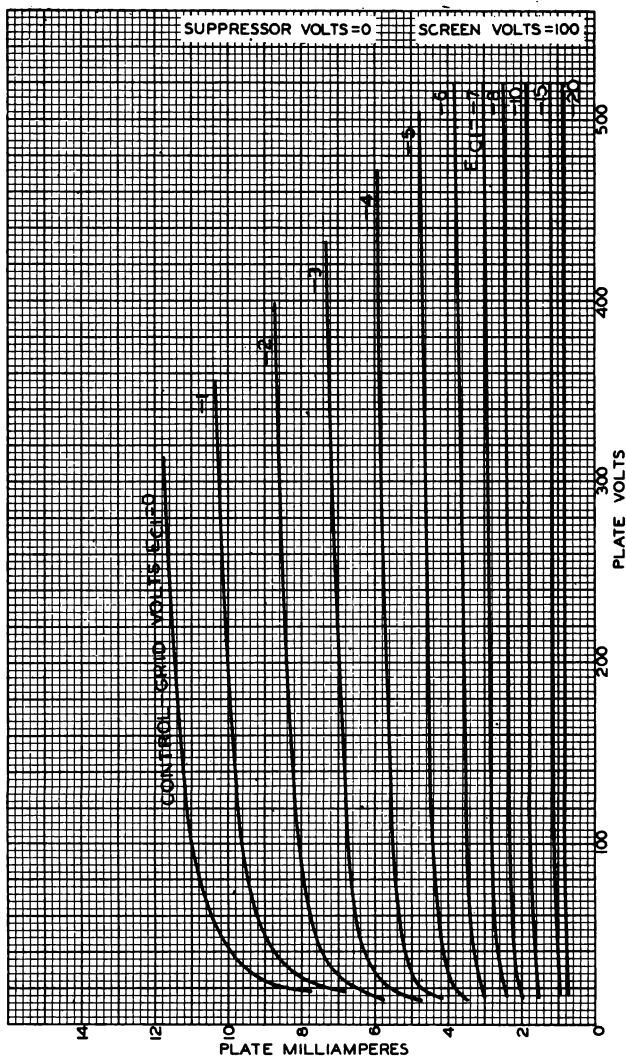
DATA

6K7



6K7

AVERAGE PLATE CHARACTERISTICS



FEB. 24, 1937

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4742



6K8, 6K8-G, 6K8-GT

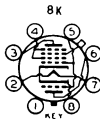
TRIODE-HEXODE CONVERTER

6K8
6K8-G
6K8-GT

Heater		Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts	
Current	0.3	amp.	
Direct Interelectrode Capacitances:			
	6K8 ^o	6K8-G [▲]	6K8-GT [▲]
Hexode Grid #3 to Hexode Plate	0.03	0.08	0.08 <u>max.</u> μ f
Hexode Grid #3 to Triode Plate	0.02	0.05	0.05 <u>max.</u> μ f
Hexode Grid #3 to Triode Grid & Hexode Grid #1	0.2	0.2	0.2 <u>max.</u> μ f
Triode Grid & Hexode Grid #1 to Triode Plate	1.1	1.8	1.8 μ f
Triode Grid & Hexode Grid #1 to Hexode Plate	0.1	0.15	0.15 <u>max.</u> μ f
Hexode Grid #3 to All Other Electrodes (R-F Input)	6.6	4.6	4.6 μ f
Triode Plate to All Other Electrodes Except Triode Grid & Hexode Grid #1 (Osc. Output)	3.2	3.4	3.4 μ f
Triode Grid & Hexode Grid #1 to All Other Electrodes Except Triode Plate (Osc. Input)	6.0	6.5	6.5 μ f
Hexode Plate to All Other Electrodes (Mixer Output)	3.5	4.8	4.8 μ f
Overall Length	{ 3-1/8" max. 2-9/16" max. 1-5/16" max.	{ 4-7/32" to 4-15/32" max. 3-21/32" to 3-29/32" max. 1-9/16" min.	{ 3-9/16" max. 3" max. T-9 min.
Seated Height			
Maximum Diameter			1-5/16"
Bulb Cap	Metal Shell, MT-8 Miniature	ST-12 Skirted Min.	T-9 Skirted Min.
Base	{ Small Wafer Octal 8-Pin	{ Sm. Shell Oct. 8-Pin	{ Sm. Wafer Oct. 8-Pin, Sleeve GT-8K Pin 5 - Hexode Grid #1 & Triode Grid Pin 6 - Triode Plate Pin 7 - Heater Pin 8 - Cathode Cap - Hexode Grid #3
Basing Designation	8K	G-8K	GT-8K
Pin 1 { 6K8, Shell 6K8-G, No Con. 6K8-GT, Sleeve			
Pin 2 - Heater			
Pin 3 - Hexode Plate			
Pin 4 - Hexode Grids #2 & #4			
Mounting Position			Any

BOTTOM

VIEW



BOTTOM

VIEW

CONVERTER SERVICE

Hexode Plate Voltage	300 max. volts
Hexode Screen (Grids #2 & #4) Voltage	150 max. volts
Hexode Screen Supply Voltage	300 max. volts
Hexode Control-Grid (Grid #3) Voltage	0 min. volts
Triode Plate Voltage	125 max. volts
Hexode Plate Dissipation	0.75 max. watt
Hexode Screen Dissipation	0.7 max. watt
Triode Plate Dissipation	0.75 max. watt
Total Cathode Current	16. max. ma.

Typical Operation:

Hexode Plate Voltage	100	250	volts
Hexode Screen Voltage	100	100	volts
Hexode Control-Grid Voltage	-3	-3	volts
Triode Plate Voltage	100	100	volts
Triode Grid Resistor	50000	50000	ohms
Hexode Plate Resistance (approx.)	0.4	0.6	megohm
Conversion Transconductance	325	350	μ mhos
Conversion Transcond. with Hexode Grid #3 Bias of -30 volts (approx.)	2	2	μ mhos
Hexode Plate Current	2.3	2.5	ma.
Hexode Screen Current	6.2	6.0	ma.
Triode Plate Current	3.8	3.8	ma.
Triode Grid & Hexode Grid #1 Current	0.15	0.15	ma.
Total Cathode Current	12.5	12.5	ma.

NOTE: The transconductance of the triode section, not oscillating, is approximately 3000 μ mhos when the triode plate volts = 100 and the triode grid volts = 0.

□ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ With close-fitting shield connected to cathode.

○ With shell connected to cathode.

← Indicates a change.

May 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

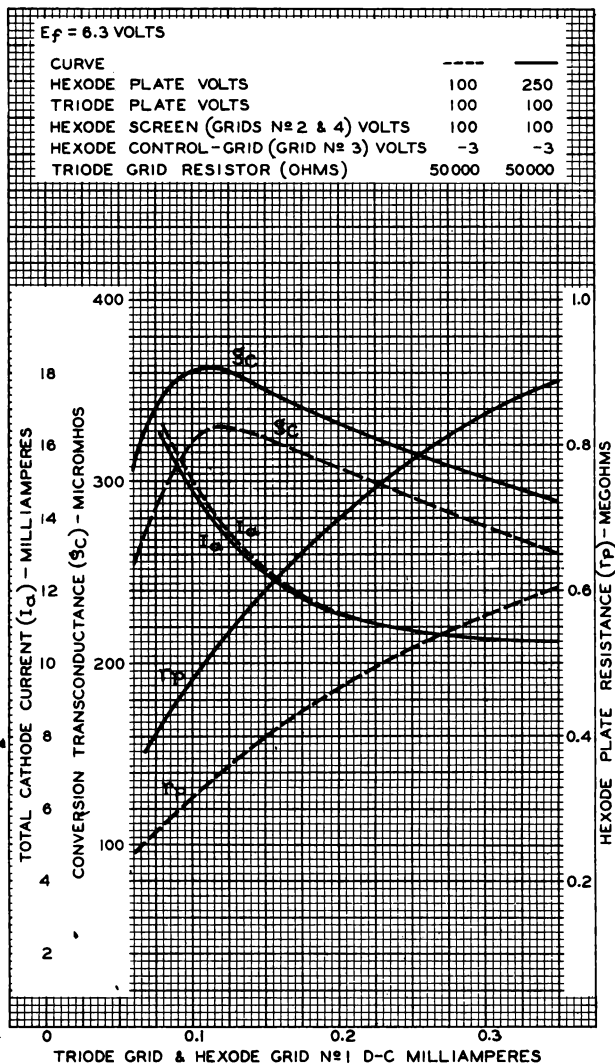
DATA

6K8



6K8

OPERATION CHARACTERISTICS



APRIL 8, 1938

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4886R1

6L6
6L6-G

6L6, 6L6-G

BEAM POWER TUBE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.9 amp

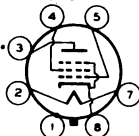
Direct Interelectrode Capacitances (Approx.):

	6L6 ^o	6L6-G ^{oo}	
Grid No.1 to plate . .	0.4	0.9	μf
Grid No.1 to cathode & grid No.3, grid No.2, and heater	10	11.5	μf
Plate to cathode & grid No.3, grid No.2, and heater	12	9.5	μf

Mechanical:

	6L6	6L6-G
Mounting Position	Any	Any
Maximum Overall Length .	4-5/16"	5-5/16"
Maximum Seated Length . .	3-3/4"	4-3/4"
Maximum Diameter	1-5/8"	2-1/16"
Bulb	Metal Shell MT-10	ST-16
Base	Small-Wafer Octal 7-Pin (JETEC No. B7-22)	Medium-Shell Octal 7-Pin (JETEC No. B7-12)
Basing Designation	7AC	G-7AC

Pin 1 { 6L6, Shell
6L6-G, No Conn.
Pin 2 - Heater
Pin 3 - Plate



Pin 4 - Grid No.2
Pin 5 - Grid No.1
Pin 7 - Heater
Pin 8 - Cathode,
Grid No.3

AF POWER AMPLIFIER - Class A₁†

Triode Connection - Grid No.2 Connected to Plate

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	275 max.	volts
PLATE DISSIPATION	19 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	180 max.	volts
Heater positive with respect to cathode .	180 max.	volts

Typical Operation and Characteristics:

	Fixed Bias	Cathode Bias	
Plate Voltage	250	250	volts
Grid-No.1 (Control-Grid)			
Voltage	-20	-	volts
Cathode-Bias Resistor	-	490	ohms

o, oo, †: See next page.

←Indicates a change.

NOV. 5, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1

6L6
6L6-G



6L6, 6L6-G BEAM POWER TUBE

	Fixed Bias	Cathode Bias	
Peak AF Grid-No.1 Voltage . . .	20	20	volts
Zero-Signal Plate Current . . .	40	40	ma
Max.-Signal Plate Current . . .	44	42	ma
Amplification Factor	8	-	
Plate Resistance (Approx.) . . .	1700	-	ohms
Transconductance	4700	-	μmhos
Load Resistance	5000	6000	ohms
Total Harmonic Distortion . . .	5	6	%
Max.-Signal Power Output . . .	1.4	1.3	watts

→ **Maximum Circuit Values (For maximum rated conditions):**

Grid-No.1-Circuit Resistance:			
For fixed-bias operation	0.1 max.	megohm	
For cathode-bias operation	0.5 max.	megohm	

AF POWER AMPLIFIER - Class A₁†

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	360 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	270 max.	volts
PLATE DISSIPATION	19 max.	watts
GRID-No.2 INPUT	2.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	180 max.	volts
Heater positive with respect to cathode .	180 max.	volts

→ **Typical Operation and Characteristics:**

Fixed-Bias Operation

Plate Voltage	200	250	300	350	volts
Grid-No.2 Voltage	200	250	200	250	volts
Grid-No.1 Voltage	-11.5	-14	-12.5	-18	volts
Peak AF Grid-No.1 Voltage .	11.5	14	12.5	18	volts
Zero-Signal Plate Current .	52	72	48	54	ma
Max.-Signal Plate Current .	57	79	55	66	ma
Zero-Signal Grid-No.2					
Current	3.5	5.0	2.5	2.5	ma
Max.-Signal Grid-No.2					
Current	5.7	7.3	4.7	7.0	ma
Plate Resistance (Approx.)	35000	22500	35000	33000	ohms
Transconductance	5300	6000	5300	5200	μmhos
Load Resistance	3000	2500	4500	4200	ohms
Total Harmonic Distortion .	9	10	11	15	%
Max.-Signal Power Output .	4	6.5	6.5	10.8	watts

Cathode-Bias Operation

Plate Voltage	200	250	300	volts
Grid-No.2 Voltage	200	250	200	volts

° With shell connected to cathode.

°° With no external shield.

†: See next page.

→ indicates a change.

NOV. 5, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1



6L6, 6L6-G

6L6
6L6-G

BEAM POWER TUBE

Cathode-Bias Resistor	186	167	218	ohms
Peak AF Grid-No.1 Voltage	11.5	14	12.7	volts
Zero-Signal Plate Current	55	75	51	ma
Max.-Signal Plate Current	56	78	54.5	ma
Zero-Signal Grid-No.2 Current	4.2	5.4	3.0	ma
Max.-Signal Grid-No.2 Current	5.6	7.2	4.6	ma
Load Resistance	3000	2500	4500	ohms
Total Harmonic Distortion	9	10	11	%
Max.-Signal Power Output	4	6.5	6.5	watts

Maximum Circuit Values (For maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

PUSH-PULL AF POWER AMPLIFIER - Class A₁[†]**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE	360 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	270 max.	volts
PLATE DISSIPATION	19 max.	watts
GRID-No.2 INPUT	2.5 max.	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode .	180 max.	volts
Heater positive with respect to cathode .	180 max.	volts

Typical Operation and Characteristics:*Unless otherwise specified, values are for 2 tubes*

	Fixed Bias		Cathode Bias		
Plate Voltage	250	270	250	270	volts
Grid-No.2 Voltage	250	270	250	270	volts
Grid-No.1 Voltage	-16	-17.5	-	-	volts
Cathode-Bias Resistor	-	-	124	124	ohms
Peak AF Grid-No.1-to-					
Grid-No.1 Voltage	32	35	35.6	28.2	volts
Zero-Signal Plate Current	120	134	120	134	ma
Max.-Signal Plate Current	140	155	130	145	ma
Zero-Signal Grid-No.2					
Current	10	11	10	11	ma
Max.-Signal Grid-No.2					
Current	16	17	15	17	ma
Plate Resistance (Per tube)					
(Approx.)	24500	23500	-	-	ohms
Transconductance (Per tube)	5500	5700	-	-	μmhos
Effective Load Resistance					
(Plate to plate)	5000	5000	5000	5000	ohms
Total Harmonic Distortion	2	2	2	2	%
Max.-Signal Power Output.	14.5	17.5	13.8	18.5	watts

[†]: See next page.

←Indicates a change

NOV. 5, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 2

6L6
6L6-G



6L6, 6L6-G BEAM POWER TUBE

→ Maximum Circuit Values (For maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed-bias operation 0.1 max. megohm
For cathode-bias operation 0.5 max. megohm

PUSH-PULL AF POWER AMPLIFIER - Class AB₁†

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 360 max. volts
GRID-No.2 (SCREEN) VOLTAGE 270 max. volts
PLATE DISSIPATION 19 max. watts
GRID-No.2 INPUT 2.5 max. watts

→ PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . 180 max. volts
Heater positive with respect to cathode . 180 max. volts

→ Typical Operation:

Values are for 2 tubes*

	Fixed Bias		Cathode Bias	
Plate Voltage	360	360	360	volts
Grid-No.2 Voltage	270	270	270	volts
Grid-No.1 Voltage	-22.5	-22.5	-	volts
Cathode-Bias Resistor	-	-	248	ohms
Peak AF Grid-No.1-to-				
Grid-No.1 Voltage	45	45	40.6	volts
Zero-Signal Plate Current	88	88	88	ma
Max.-Signal Plate Current	132	140	100	ma
Zero-Signal Grid-No.2				
Current	5	5	5	ma
Max.-Signal Grid-No.2				
Current	15	11	17	ma
Effective Load Resistance				
(Plate to plate)	6600	3800	9000	ohms
Total Harmonic Distortion	2	2	4	%
Max.-Signal Power Output	26.5	18	24.5	watts

→ Maximum Circuit Values (For maximum rated conditions):

Grid-No.1-Circuit Resistance:‡

For fixed-bias operation 0.1 max. megohm
For cathode-bias operation 0.5 max. megohm

PUSH-PULL AF POWER AMPLIFIER - Class AB₂‡

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 360 max. volts
GRID-No.2 (SCREEN) VOLTAGE 270 max. volts
PLATE DISSIPATION 19 max. watts
GRID-No.2 INPUT 2.5 max. watts

‡, †, ‡: See next page.

→ indicates a change.

NOV. 5, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 2

6L6
6L6-G

6L6, 6L6-G

BEAM POWER TUBE

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . . 180 max. volts
 Heater positive with respect to cathode. . . 180 max. volts

Typical Operation:*Values are for 2 tubes***Fixed Bias**

Plate Voltage.	360	360	volts
Grid-No.2 Voltage.	225	270	volts
Grid-No.1 Voltage.	-18	-22.5	volts
Peak AF Grid-No.1-to Grid-No.1 Voltage	52	72	volts
Zero-Signal Plate Current.	78	88	ma
Max.-Signal Plate Current.	142	205	ma
Zero-Signal Grid-No.2 Current.	3.5	5	ma
Max.-Signal Grid-No.2 Current.	11	16	ma
Effective Load Resistance			
(Plate to plate).	6000	3800	ohms
Peak Grid-Input Power.	140	270	mw
Total Harmonic Distortion.	2	2	%
Max.-Signal Power Output	31	47	watts

Maximum Circuit Values (For maximum rated conditions):**Grid-No.1-Circuit Resistance†:**

For fixed-bias operation 0.1 max. megohm
 For cathode-bias operation Not recommended

† Subscript 1 indicates that grid-No.1 current does not flow during any part of input cycle.

♦ Subscript 2 indicates that grid-No.1 current flows during some part of input cycle.

† driver stage should be capable of supplying the specified driving power at low distortion to the No.1 grids of the AB₂ stage. To minimize distortion, the effective resistance per grid-No.1 circuit of the AB₂ stage should be held at a low value. For this purpose, the use of transformer coupling is recommended.

▲ The type of input coupling used should not introduce too much resistance in the grid-No.1 circuit. Transformer- or impedance-coupling devices are recommended.

←Indicates a change.

NOV. 5, 1954

TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

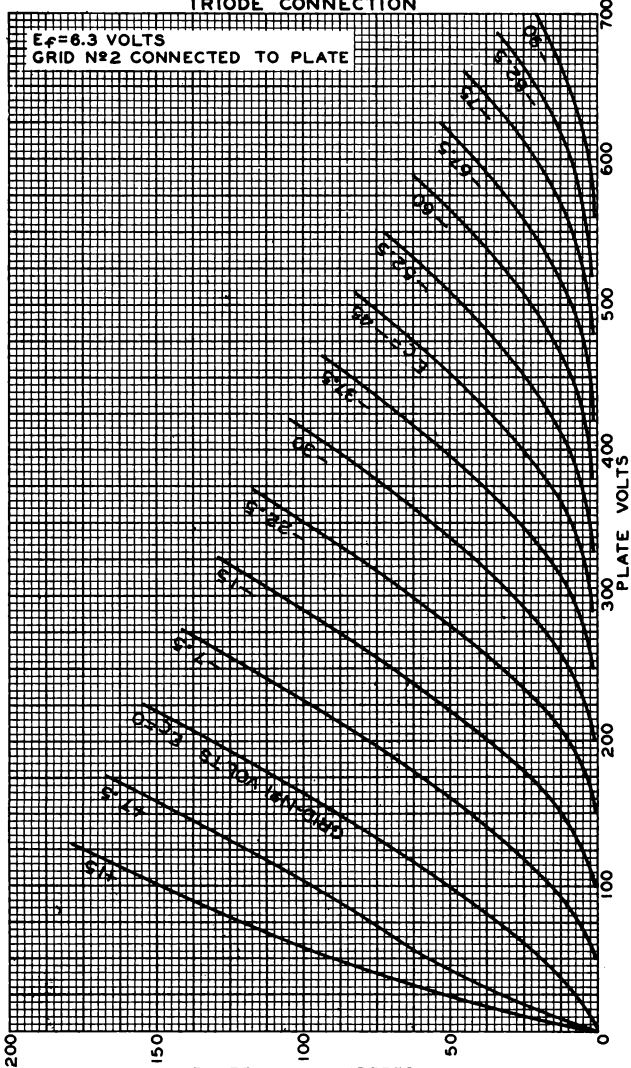
DATA 3

6L6



6L6

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



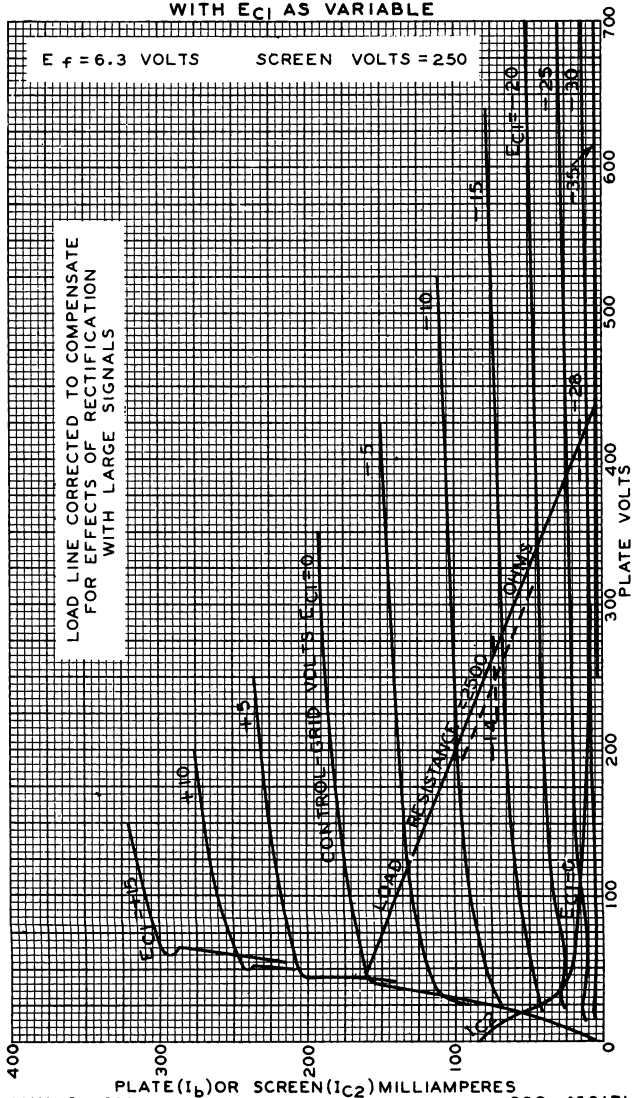
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TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4966R1



AVERAGE PLATE CHARACTERISTICS
WITH E_c AS VARIABLE



MAY 6, 1936

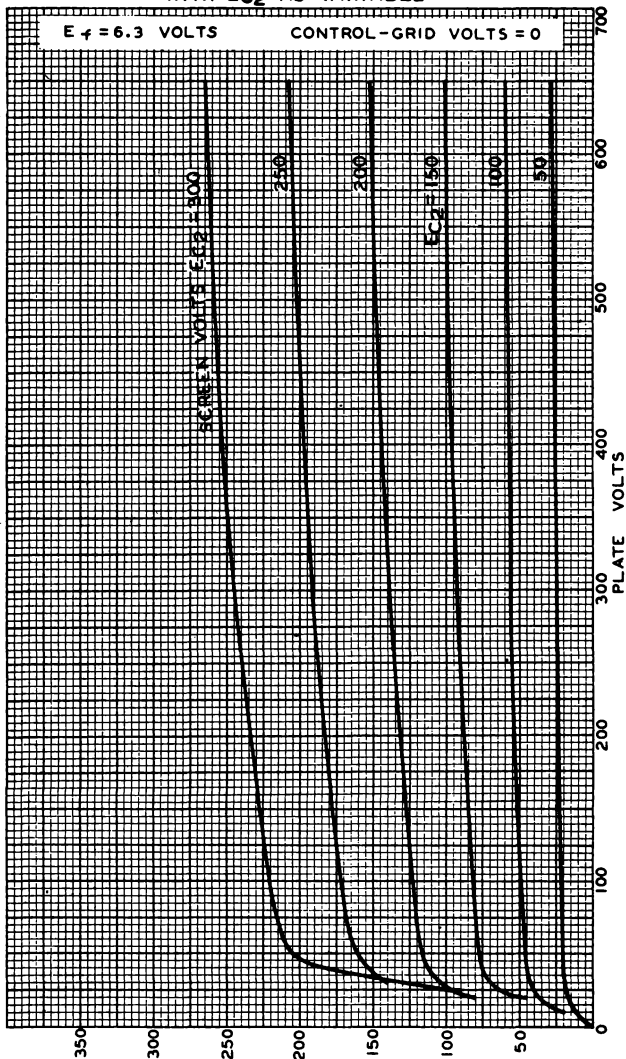
RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4581RI

6L6



6L6

AVERAGE PLATE CHARACTERISTICS
WITH EC_2 AS VARIABLE

MAY 8, 1936

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

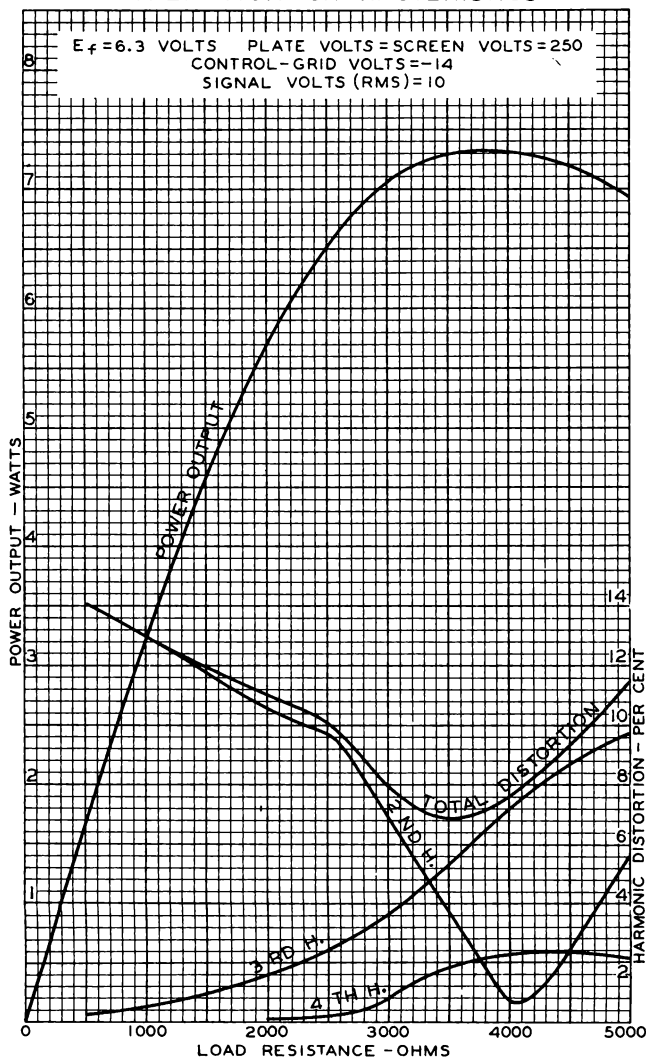
92C-4580RI



6L6

6L6

OPERATION CHARACTERISTICS



MAY 7, 1936

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

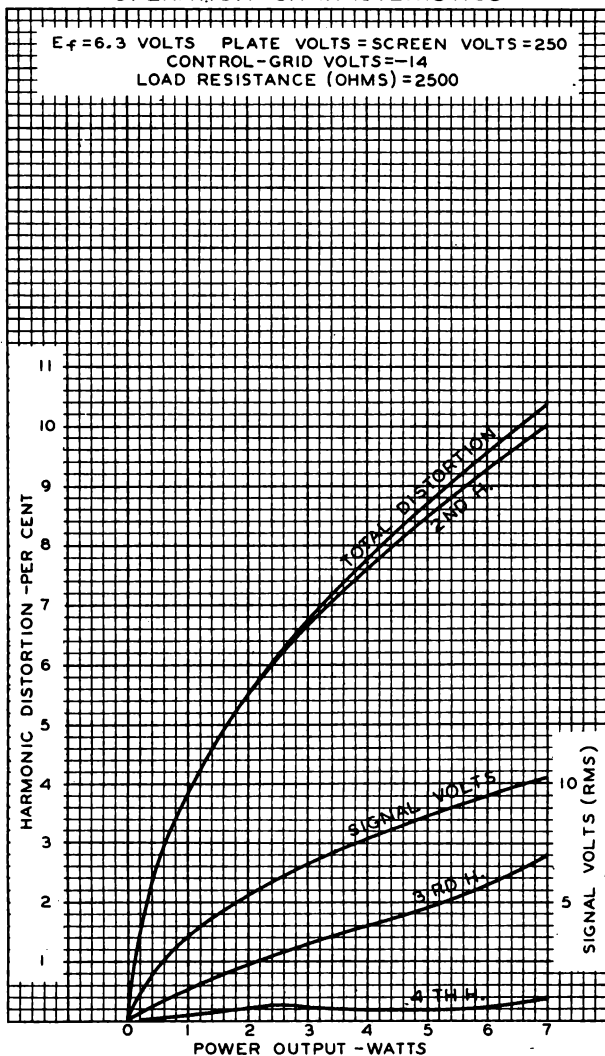
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6L6



6L6

OPERATION CHARACTERISTICS



MAY 7, 1936

RCA RADIORON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4809



6L7, 6L7-G

6L7
6L7-G

PENTAGRID MIXER AMPLIFIER

Heater ■	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
	6L7	6L7-G
Direct Interelectrode Cap.	▲	▲▲
Grid #1 to Grid #3	0.2 max.	0.2 max. μf
Grid #1 to Plate	0.001 max.	0.005 max. μf
Grid #3 to Plate	0.1	0.24 μf
Grid #1 to All Other Electrodes	7.5	6 μf
Grid #3 to All Other Electrodes	10	12 μf
Plate to All Other Electrodes	11	10 μf
Overall Length	3-1/8" max.	4-7/32" to 4-15/32"
Maximum Diameter	1-5/16"	1-9/16"
Bulb	Metal Shell, MT-8	ST-12
Cap	Miniature	Skirted Min.
Base	{ Small Wafer Octal 7-Pin	{ Small Shell Octal 7-Pin
Basing Designation	7T	G-7T
Pin 1 { 6L7, Shell 6L7-G, No Con.		Pin 5 - Grid #3
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate		Pin 8 - Cathode & Grid #5
Pin 4 - Grids #2 & #4		Cap - Grid #1
Mounting Position	BOTTOM VIEW	Any
AMPLIFIER - Class A ₁		
Plate Voltage	300 max.	volts
Screen Voltage (Grids #2 & #5)	100 max.	volts
Plate Dissipation	1.5 max.	watts
Screen Dissipation	1.0 max.	watt
Typical Operation:		
Plate	250	volts
Screen	100	volts
Control Grid (Grid #1)	-3	volts
Control Grid (Grid #3)	-3	volts
Plate Res. (approx.)	0.6	megohm
Transcond., Grid #1 to Plate	1100	μmhos
Transcond., Grid #1 to Plate*	5 approx.	μmhos
Plate Cur.	5.3	ma.
Screen Cur.	6.5	ma.
MIXER		
Plate Voltage	300 max.	volts
Screen Voltage (Grids #2 & #4)	150 max.	volts
Plate Dissipation	1.0 max.	watt
Screen Dissipation	1.5 max.	watts
■ In circuits where the cathode is not connected directly to the heater, the potential difference between heater and cathode should be kept as low as possible. ▲ With shell connected to cathode. ▲▲ With close-fitting shield connected to cathode. * With grid #1 bias of -15 volts, and grid #3 bias of -15 volts.		

FEB. 2, 1940

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

6L7
6L7-G



6L7,6L7-G

PENTAGRID MIXER AMPLIFIER

(continued from preceding page)

Typical Operation:

Plate	250	250#	volts
Screen	100	150#	volts
Signal-Grid (Grid #1)	-3 min.	-6# min.	volts
Oscillator Grid (Grid #3) **	-10	-15	volts
Peak Osc.-Grid Voltage			
Applied to Grid #3	12 min.	18 min.	volts
Plate Res.	Greater	than 1	megohm
Conversion Transcond.	375	350	μmhos
Conversion Transcond.	5●	5△	μmhos
Plate Cur.	2.4	3.3	ma.
Screen Cur.	7.1	9.2	ma.

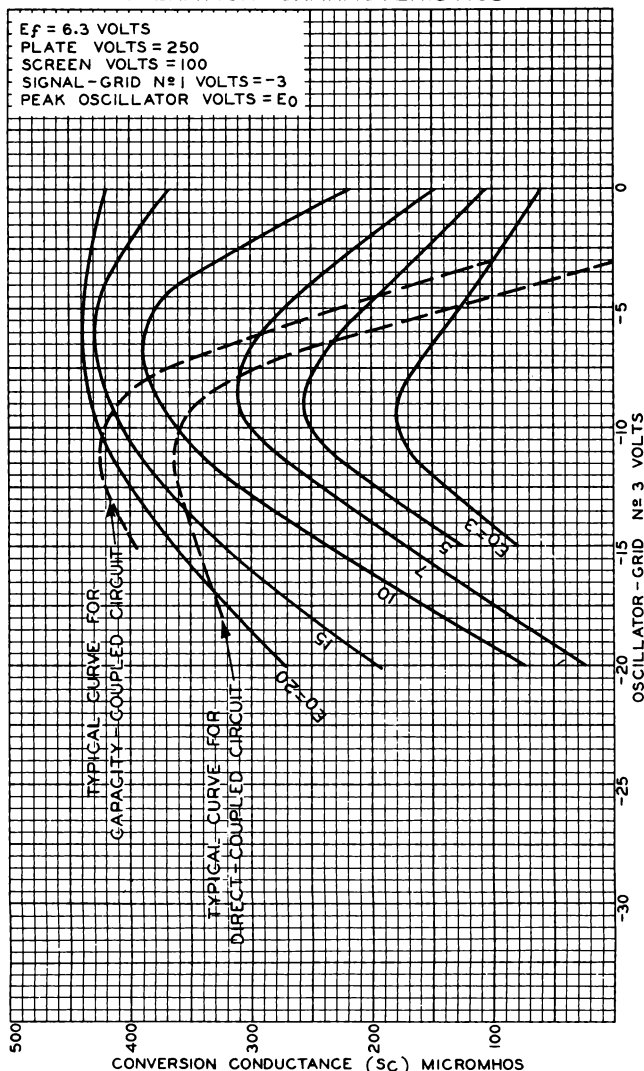
** The d-c resistance in grid #3 circuit should not exceed 50000 ohms.
 ● With grid #1 bias of -30 volts. △ With grid #1 bias of -15 volts.
 # These conditions are recommended for multi-range receiver applications.

FEB. 2, 1940

RCA RADIONRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

OPERATION CHARACTERISTICS

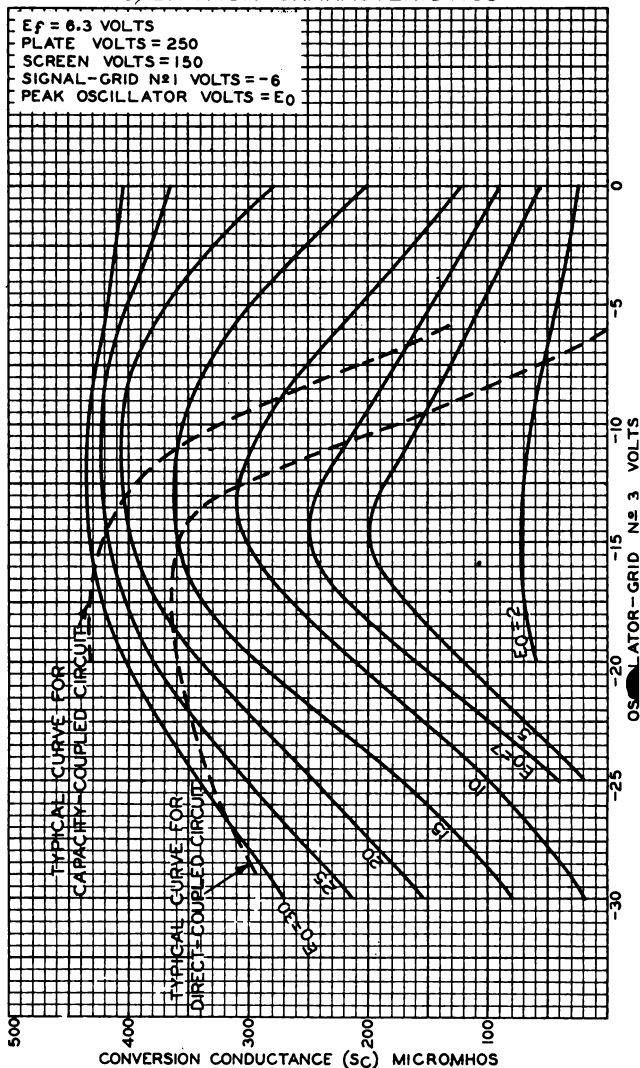


6L7



RCA-6L7

OPERATION CHARACTERISTICS



JULY 26, 1935

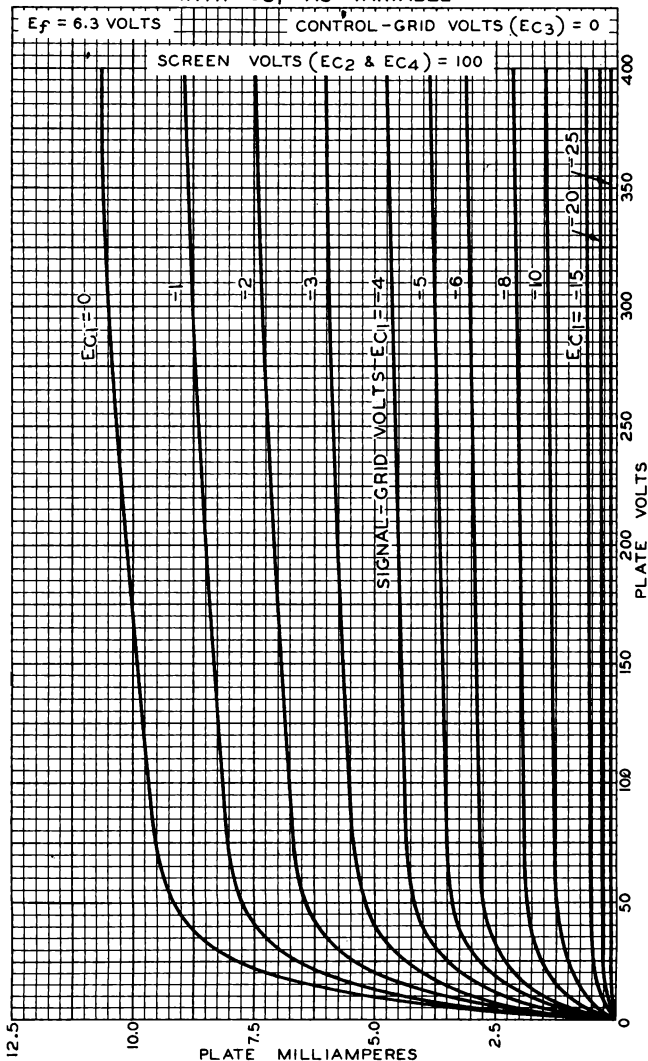
 RCA RADIODIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-4445



6L7

6L7

AVERAGE PLATE CHARACTERISTICS
WITH EC_1 AS VARIABLE

JAN. 3, 1936

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

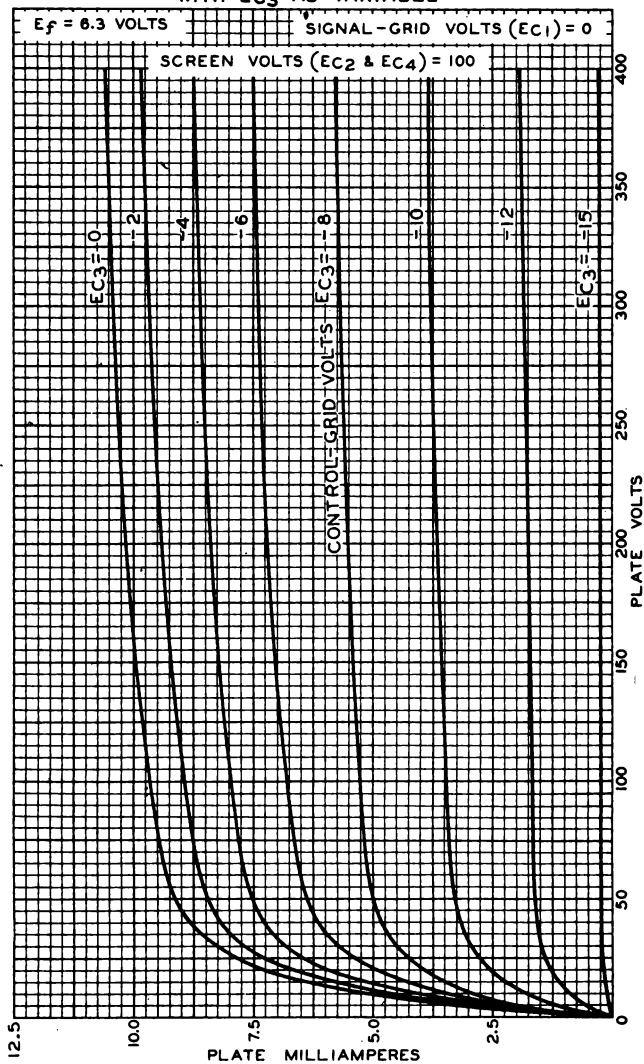
92C-4531

6L7



6L7

AVERAGE PLATE CHARACTERISTICS WITH EC_3 AS VARIABLE



JAN. 7, 1936

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

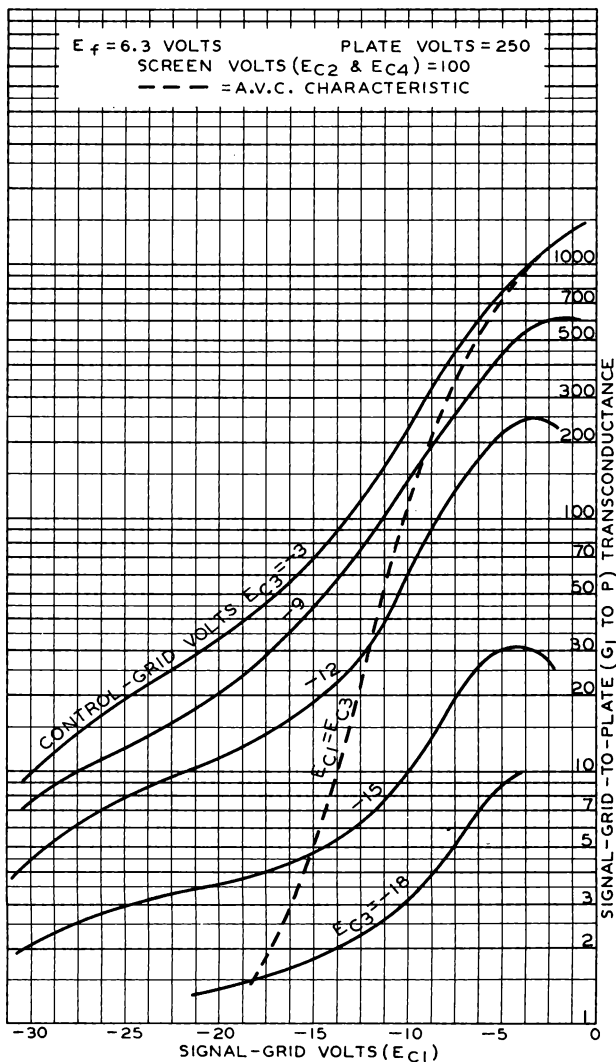
92C-4534



6L7

6L7

AVERAGE CHARACTERISTICS



JAN. 8, 1936

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RCA MANUFACTURING COMPANY, INC.

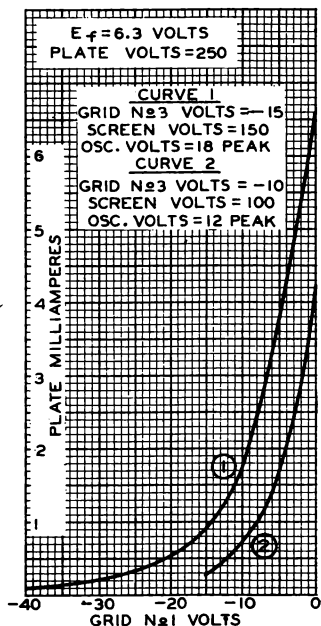
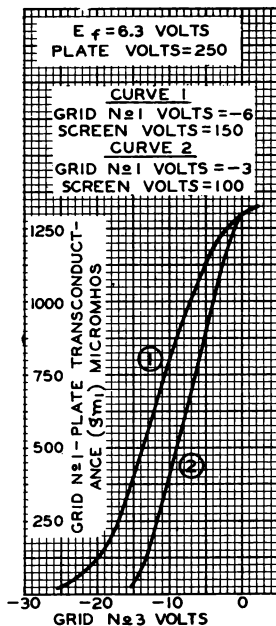
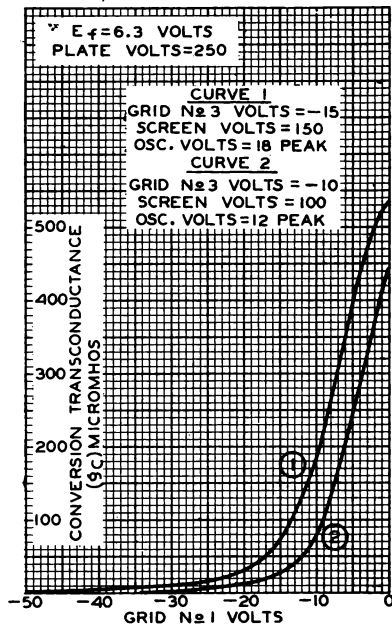
92C-4536

6L7



6L7

AVERAGE CHARACTERISTICS



AUG. 5, 1935

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4442



6N6-G



6N6-G

DIRECT-COUPLED POWER AMPLIFIER

Heater *	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.8	amp.
Maximum Overall Length		4-11/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base	Medium Shell Octal 7-Pin	
Pin 1 - No Connection	Pin 5 - Input-Triode Grid	
Pin 2 - Heater	Pin 7 - Heater	
Pin 3 - Output-Triode Plate	Pin 8 - Cathode	
Pin 4 - Input-Triode Plate		
Mounting Position	BOTTOM VIEW (G-7AU)	Any

**AMPLIFIER - Class A₁****Operating Conditions and Characteristics:**

Heater *	6.3	volts
Output-Triode Plate	300 max.	volts
Input-Triode Plate	300 max.	volts
Input-Triode Grid ▲	0	volts
Peak A-F Grid Voltage	21	volts
Amp. Fact.	58	
Plate Res.	24000	ohms
Transcond. #	2400	μmhos
Output-Triode Plate Cur.	42	ma.
Input-Triode Plate Cur.	9	ma.
Load Res. □	7000	ohms
Total Harmonic Distortion	5	%
Power Output	4	watts

* In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ Input grid to output plate.

The input triode serves as a driver for the output triode and is directly coupled to it. No external bias supply is required, but the input-triode grid does not draw grid current because a bias voltage is set up automatically in the tube.

□ If two tubes are operated in push-pull, the plate-to-plate load resistance should be 10000 ohms.

DEC. 1, 1939

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



6N7, 6N7-GT/G

CLASS B TWIN AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.8	amp.
	6N7	6N7-GT/G
Maximum Overall Length	3-1/4"	3-5/16"
Maximum Seated Height	2-11/16"	2-2/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell, MT-8	
Base	{ Small Wafer { Intermed. Sh.	
	Octal 8-Pin	Octal 8-Pin
Basing Designation	8B	
Pin 1- $\begin{cases} 6N7, \text{ Shell} \\ 6N7-GT/G, \\ \text{No Conn.} \end{cases}$	Pin 5-Grid (Triode T_1)	
Pin 2-Heater	Pin 6-Plate (Triode T_1)	
Pin 3-Plate (Triode T_2)	Pin 7-Heater	
Pin 4-Grid (Triode T_2)	Pin 8-Cathode	
Mounting Position	8B Any	

For convenience, one triode unit is identified as T_1 ; the other as T_2 .

Maximum Ratings Are Design-Center Values

CLASS B POWER AMPLIFIER

Plate Voltage	300 max. volts
Peak Plate Current (per plate)	125 max. ma.
Average Plate Dissipation (per plate)	5.5 max. watts
Typical Operation:	
<i>Unless otherwise specified, values are for the two units</i>	
Plate-Supply Impedance	0 1000 $\square$ ohms
Effective Grid-Circuit Impedance (per unit)	0 516 $\square$ ohms
Plate Voltage	300 300 volts
Grid Voltage	0 0 volts
Peak A-F Grid-to-Grid Voltage Δ	58 82* volts
Zero-Sig. D-C Plate Cur.	35 35 ma.
Max.-Sig. D-C Plate Cur.	70 70 ma.
Peak Grid Cur. (per unit)	20 22 ma.
Effective Load Res. (plate to plate)	8000 8000 ohms
Total Harmonic Distortion	4 8 %
Third Harmonic Distortion	3.5 7.5 %
Fifth Harmonic Distortion	1.5 2.5 %
Max.-Sig. Power Output	10 10 watts

$\square$ Practical design value.

$\square$ At 400 cycles for class B stage in which the effective resistance per grid circuit is 500 ohms, and the leakage reactance of the coupling transformer is 50 millihenries. The driver stage should be capable of supplying the grids of the class B stage with the specified values at low distortion.

* Includes peak voltage drop through the grid circuit impedance.

Δ For power output shown.

Two 6N7's or 6N7-G's can be operated in a class B output stage with the two triode units of each tube connected in parallel to give a power output of 20 watts (approx.) under conditions of 300 volts on the plates and a 5000-ohm plate-to-plate load.

$\blacksquare$ See next page.

$\leftarrow$ Indicates a change.

6N7
6N7-GT/G



6N7, 6N7-GT/G

CLASS B TWIN AMPLIFIER

(continued from preceding page)

CLASS A₁ AMPLIFIER - As Driver

Both grids connected together at socket; likewise, both plates.

Plate Voltage 300 max. volts
Plate Dissipation (per plate) 1.0 max. watt

Typical Operation:

Plate	250	294	volts
Grid ▲	-5	-6	volts
Amp. Fact.	35	35	
Plate Res.	11300	11000	ohms
Transcond.	3100	3200	μmhos
Plate Cur.	6	7	ma.

Plate Load—Depends largely on the design factors of the class B amplifier. In general, the load will be between 20000 and 40000 ohms.

Power Output—under max. voltage conditions, upwards of 400 mw. can be obtained.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- ▲ The d-c resistance in the grid circuit of the 6N7 or 6N7-GT/G as a class A amplifier may be as high as 0.5 megohm with cathode bias. With fixed bias, the resistance should not exceed 0.1 megohm.

For additional curves, see Types 6A6 and 53; for data, see RESISTANCE-COUPLED AMPLIFIER CHART.

< Indicates a change.

June 1, 1942

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RCA MANUFACTURING COMPANY, INC.

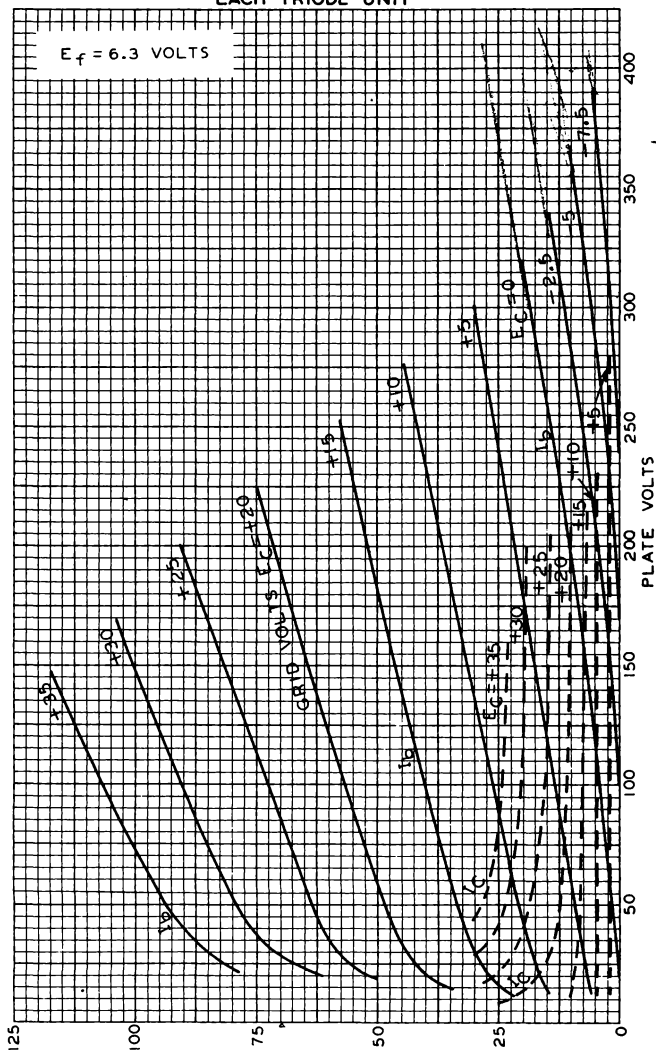
DATA



6N7

6N7

AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT



DEC. 18, 1939

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4611

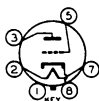
6P5-GT/G



6P5-GT/G

DETECTOR AMPLIFIER TRIODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances: ^o		
Grid to Plate	2.6	μf
Grid to Cathode	3.4	μf
Plate to Cathode	5.5	μf
Maximum Overall Length		3-5/16"
Maximum Seated Height		2-3/4"
Maximum Diameter		1-5/16"
Bulb		T-9
Base	Intermediate Shell Octal 6-Pin	
Pin 1—No Connection		Pin 5—Grid
Pin 2—Heater		Pin 7—Heater
Pin 3—Plate		Pin 8—Cathode
Mounting Position		Any



BOTTOM VIEW (G-6Q)

Maximum Ratings Are Design-Center Values

AMPLIFIER

Plate Voltage	250 max. volts		
Plate Dissipation	1.25 max. watts		
Typical Operation and Characteristics - Class A ₁ Amplifier:			
Plate	100	250	volts
Grid #	-5	-13.5	volts
Amp. Fact.	13.8	13.8	
Plate Res.	12000	9500	ohms
Transcond.	1150	1450	μmhos
Plate Cur.	2.5	5	ma.

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

^o With shield connected to cathode. Values are approximate.

Under maximum rated conditions, the d-c resistance in the grid circuit should not exceed 1.0 megohm.

Curves for the Type 6P5-GT/G are the same as for the 56 and the 76.

Dec. 1, 1942

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



6Q7, 6Q7-G, 6Q7-GT



DUPLEX-DIODE HIGH-MU TRIODE

Heater	Coated Unipotential Cathode			
Voltage	6.3	a-c or d-c volts		
Current	0.3	amp.		
	6Q7	6Q7-G	6Q7-GT	
Direct Interelectrode Cap.	▲	▲▲	▲▲	
Grid to Plate	1.4	1.5	1.6 μμf	
Grid to Cathode	5.0	3.2	2.2 μμf	
Plate to Cathode	3.8	5.0	5.0 μμf	
Overall Length	{ 3-1/8" max.	{ 4-7/32" to 4-15/32"	3-5/16" max.	
Seated Height	{ 2-9/16" max.	{ 3-21/32" to 3-29/32"	2-3/4" max.	
Maximum Diameter	1-5/16"	1-9/16"	1-5/16"	
Bulb	Metal Shell, MT-8	ST-12	T-9	
Cap	Miniature	{ Skirted Miniature	{ Skirted Min. Style C	
Base	{ Small Wafer Octal 7-Pin	{ Small Shell Octal 7-Pin	{ Sm. Wafer Octal 7-Pin, Sleeve	
Basing Designation	7V	G-7V	GT-7V	
Pin 1 { 6Q7, Shell				
Pin 1 { 6Q7-G, No Con.				Pin 4 - Diode Plate #2
Pin 1 { 6Q7-GT, Base Sleeve				Pin 5 - Diode Plate #1
Pin 2 - Heater				Pin 7 - Heater
Pin 3 - Triode Plate				Pin 8 - Cathode
Mounting Position	Cap - Triode Grid			
	Any			
	BOTTOM VIEW			
	TRIODE UNIT			
Plate Voltage			300 max. volts	
Characteristics - Class A ₁ Amplifier:				
Plate	100	250	volts	
Grid	-1	-3	volts	
Amp. Fact.	70	70		
Plate Res.	58000	58000	ohms	
Transcond.	1200	1200	μmhos	
Plate Cur.	0.8	1.0	ma.	
Typical Operation - Resistance-Coupled Amplifier:				
See RESISTANCE-COUPLED AMPLIFIER CHART				
	DIODE UNITS - Two			
Consideration of these units is given under Type 85. Circuits will be similar to those shown for Type 55 with fixed bias. Diode biasing of the triode unit of the 6Q7, 6Q7-G or 6Q7-GT is not suitable. Diode curves under Type 6B7 apply to the 6Q7, 6Q7-G, and 6Q7-GT.				
■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.				
▲ With shell connected to cathode. Values are approximate.				
▲▲ With close-fitting shield connected to cathode. Values are approximate.				
← Indicates a change.				

Dec. 1, 1941

RCA RADOTRON DIVISION
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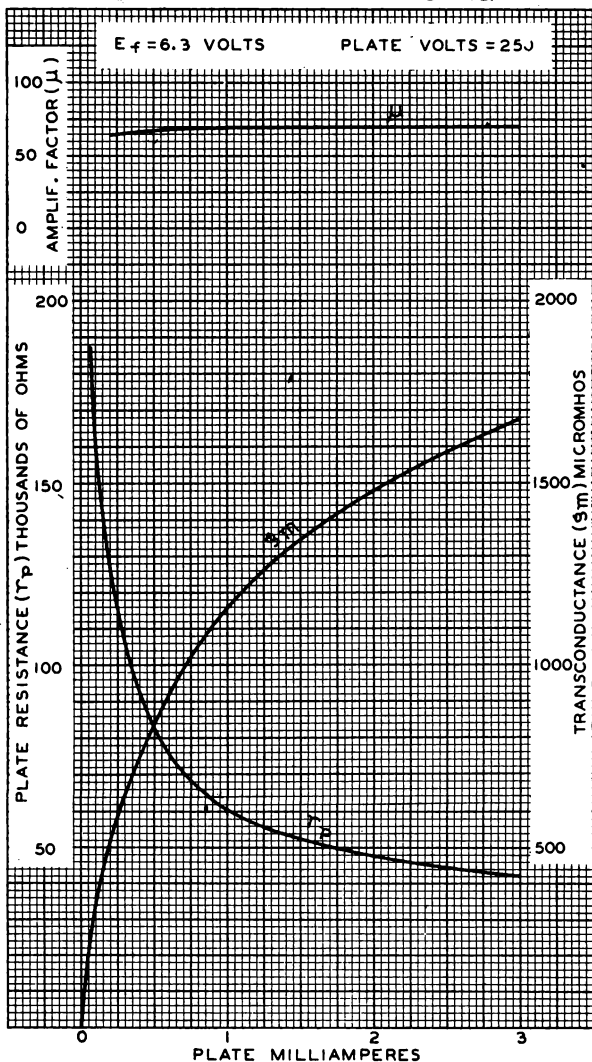
DATA

6Q7



6Q7

AVERAGE CHARACTERISTICS



JUNE 29, 1936

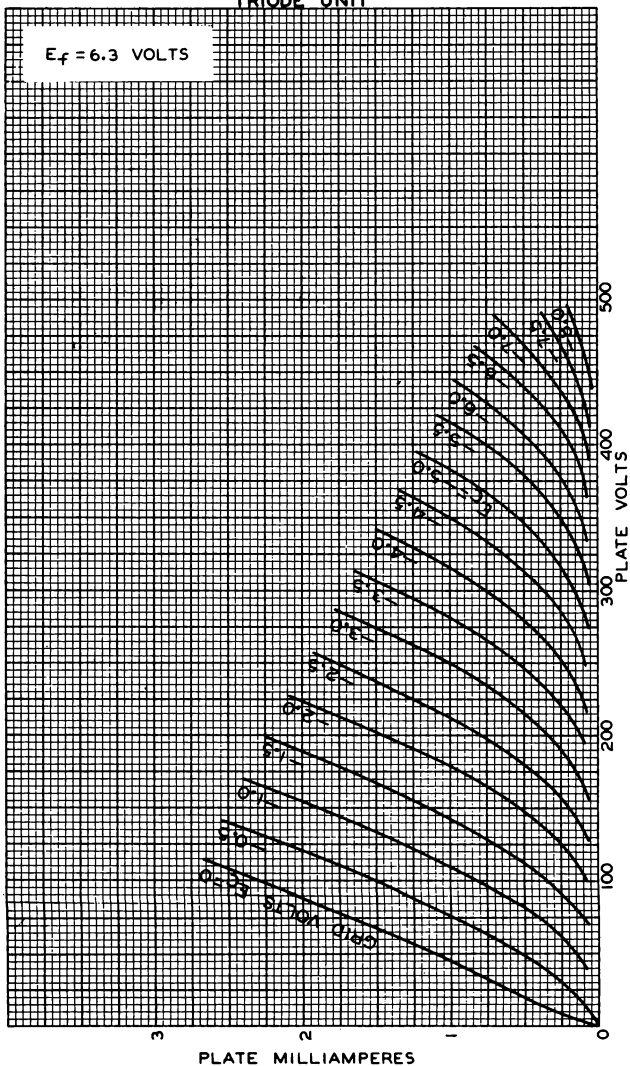
RCA RADIOTRON DIVISION
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92C-4577



6Q7

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



SEPT. 10, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4522R2



6R7, 6R7-GT/G

DUPLEX-DIODE TRIODE

6R7
6R7-GT/G

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
	6R7	6R7-GT/G
Direct Interelectrode Cap.	▲	
Grid to Plate	2.4	- μmf
Grid to Cathode	4.8	- μmf
Plate to Cathode	3.8	- μmf
Maximum Overall Length	3-1/8"	3-5/16"
Maximum Seated Height	2-9/16"	2-3/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell, MT-8	
		T-9
Cap	Miniature	{ Skirted
		{ Miniature
Base	{ Small Wafer	{ Intermed. Shell
	{ Octal 7-Pin	{ Octal 7-Pin
	7V	G-7V
Basing Designation		Pin 4 - Diode Plate #2
Pin 1 { 6R7, Shell		Pin 5 - Diode Plate #1
Pin 1 { 6R7-GT/G, No		Pin 7 - Heater
Pin 1 { Connection		Pin 8 - Cathode
Pin 2 - Heater		Cap - Triode Grid
Pin 3 - Triode Plate		
Mounting Position		Any



BOTTOM VIEW

Maximum Ratings Are Design-Center Values

TRIODE UNIT

Plate Voltage	250 max. volts
Plate Dissipation	2.5 max. watts
D-C Heater-Cathode Potential	100 max. volts
Typical Operation and Characteristics—Class A₁ Amplifier:	
Plate	250 volts
Grid	-9 volts
Amp. Fact.	16
Plate Res.	8500 ohms
Transcond.	1900 μmhos
Plate Cur.	9.5 ma.

Typical Operation—Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART. Under maximum rated conditions, the d-c resistance in the grid circuit of the 6R7 and 6R7-GT/G should not exceed 1.0 megohm.

DIODE UNITS - Two

For consideration of these units, see Type 85. Circuits will be similar to those shown for Type 55 with fixed bias. Diode biasing of the triode unit of the 6R7 and 6R7-GT/G is not suitable. Diode curves under Type 6B7 apply to the 6R7 and 6R7-GT/G.

▲ Triode unit with shell connected to cathode. values are approximate.

An additional curve applying to Types 6R7 and 6R7-GT/G is

← Indicates a change. is shown under Type 6SR7.

DEC. 1, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

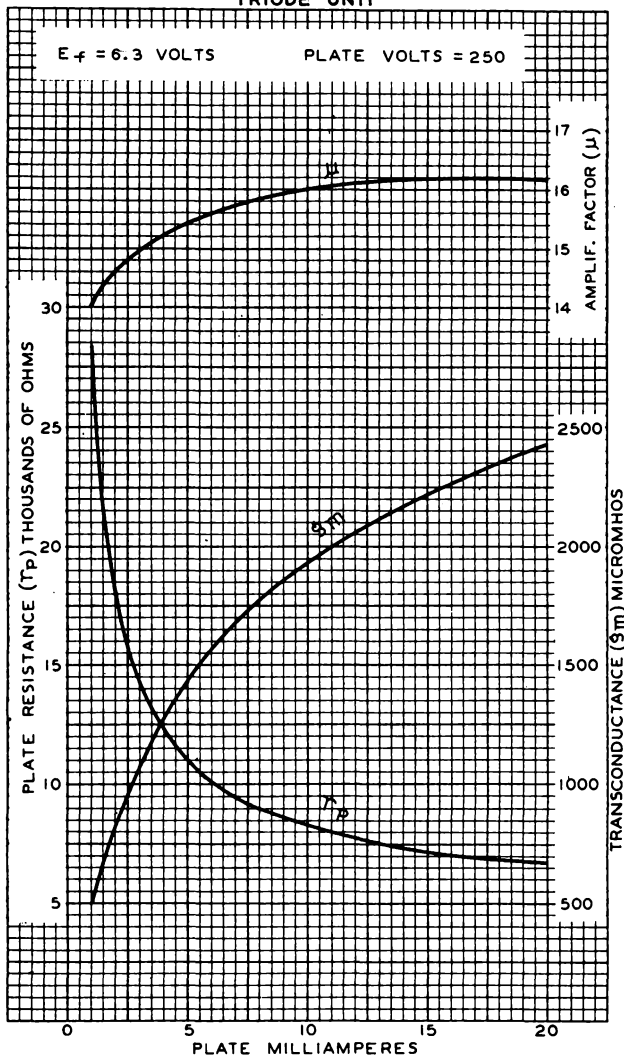
DATA

6R7



6R7

AVERAGE CHARACTERISTICS TRIODE UNIT



DEC. 14, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4546R1



6S4

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

6S4

The 6S4 is the same as the 6S4-A except that the 6S4 does not have a controlled Heater Warm-up Time, and is not intended for use in equipment having series heater-string arrangement.

MAR. 1, 1955

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



6SA-A

6SA-A

MEDIUM-MU TRIODE

9-PIN MINIATURE TYPE

Intended for use in equipment having
series heater-string arrangement

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	6.3	ac or dc volts
Current.	0.6	amp
Warm-up time (Average)	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances (Approx.):^o

Grid to plate.	2.6	$\mu\mu\text{f}$
Grid to cathode and heater	4.2	$\mu\mu\text{f}$
Plate to cathode and heater.	0.9	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier:

Plate Voltage.	250	volts
Grid Voltage	-8	volts
Amplification Factor	16	
Plate Resistance (Approx.)	3600	ohms
Transconductance	4500	μmhos
Plate Current.	26	ma
Plate Current for grid voltage of -15 volts	4.5	ma
Grid Voltage (Approx.) for plate current of 50 μamp	-23	volts

Mechanical:

Mounting Position.	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length.	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip).	2" $\pm$ 3/32"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JETEC No.E9-1)
Basing Designation for BOTTOM VIEW	.9AC

Pin 1-Internal
Connection-
Do Not Use
Pin 2-Cathode
Pin 3-Grid
Pin 4-Heater



Pin 5-Heater
Pin 6-Grid
Pin 7-Same as Pin 1
Pin 8-Same as Pin 1
Pin 9-Plate

^o Without external shield.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6S4-A



6S4-A

MEDIUM-MU TRIODE

VERTICAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:*For operation in a 525-line, 30-frame system*[□]

DC PLATE VOLTAGE 500 max. volts

PEAK POSITIVE-PULSE PLATE VOLTAGE#
(Absolute maximum) 2200[■] max. volts

PEAK NEGATIVE-PULSE GRID VOLTAGE 250 max. volts

CATHODE CURRENT:

Peak 105 max. ma

Average. 30 max. ma

PLATE DISSIPATION. 7.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . 200 max. volts

Heater positive with respect to cathode. . 200[▲] max. volts**Maximum Circuit Values:**

Grid-Circuit Resistance:

For cathode-bias operation 2.2 max. megohms

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.[#] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.[■] Under no circumstances should this absolute value be exceeded.[▲] The dc component must not exceed 100 volts.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

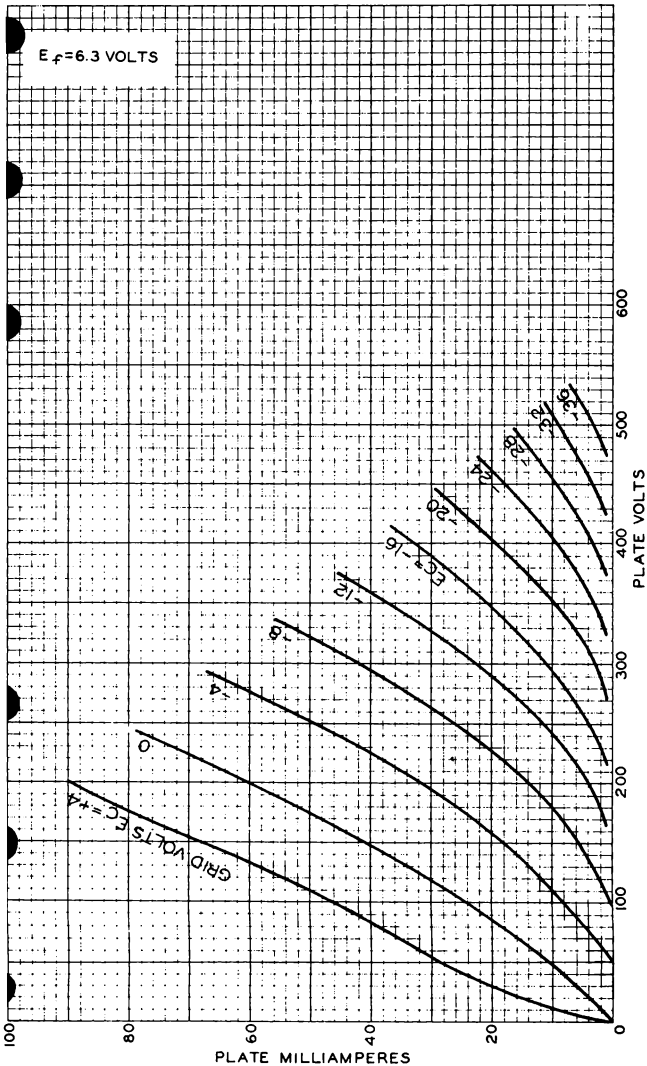
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6S4-A

6S4-A

AVERAGE PLATE CHARACTERISTICS



SEPT. 22, 1949

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7373



6S7, 6S7-G

6S7
6S7-G

TRIPLE-GRID SUPER-CONTROL AMPLIFIER

Heater ■	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
	6S7	6S7-G
Direct Interelectrode Cap.	▲	▲
Grid to Plate	0.005 max.	0.008 max. μmf
Input	6.5	4.4 μmf
Output	10.5	8 μmf
Overall Length	3-1/8" max.	{ 4-7/32" to 4-15/32"
Maximum Diameter	1-5/16"	1-9/16"
Bulb	Metal Shell, MT-8	ST-12
Cap	Miniature	Skirted Min.
Base	{ Small Wafer Octal 7-Pin	{ Small Shell Octal 7-Pin
Basing Designation	7R	G-7R
Pin 1 { 6S7, Shell 6S7-G, No Con.		Pin 5 - Suppressor
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate		Pin 8 - Cathode
Pin 4 - Screen		Cap - Grid
Mounting Position		Any



BOTTOM VIEW

AMPLIFIER - Class A₁

Plate Voltage		300 max. volts
Screen Voltage		100 max. volts
Screen Supply Voltage		300 max. volts
Grid Voltage		0 min. volts
Plate Dissipation		2.25 max. watts
Screen Dissipation		0.25 max. watt
Typical Operation:		
Plate	135	250 volts
Screen	67.5	100 volts
Grid	-3	-3 volts
Suppressor	Connected to cathode at socket	
Plate Res. (approx.)	1	1 megohm
Transcond.	1250	1750 μmhos
Transcond.	10●	10▲ μmhos
Plate Cur.	3.7	8.5 ma.
Screen Cur.	0.9	2 ma.

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ With shell connected to cathode.

▲▲ With close-fitting shield connected to cathode.

● With grid bias of -25 volts.

▲ With grid bias of -38.5 volts.

FEB. 2, 1940

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

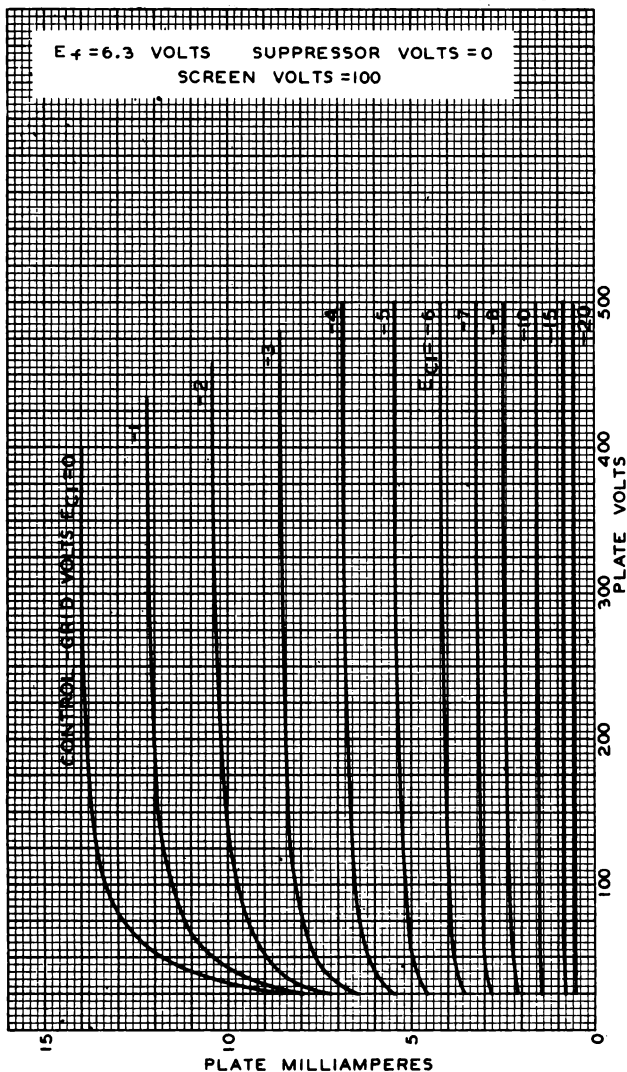
DATA

657



657

AVERAGE PLATE CHARACTERISTICS



JAN. 17, 1938

 RCA RADIODIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-4868



6S8-GT

TRIPLE DIODE—HIGH-MU TRIODE

6S8-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances:*

Triode Unit:

Grid to Plate. 1.2 μf

Grid to Cathode. 2.0 μf

Plate to Cathode 3.8 μf

Each Diode Unit:

Plate to Cathode (Approx.). 1.0 μf

* With external shield.

Mechanical:

Mounting Position. Any

Maximum Overall Length 3-5/8"

Maximum Seated Length. 3-1/16"

Maximum Diameter 1-9/32"

Bulb T-9

Base Intermediate-Shell Octal 8-Pin

Basing Designation for BOTTOM VIEW 8CB

Pin 1—Diode

Plate No.3

Pin 2—Cathode of

Triode &

Diodes

Nos. 2 & 3

Pin 3—Diode

Plate No.1



Pin 4—Diode

Plate No.2

Pin 5—Cathode of

Diode No.1

Pin 6—Triode Plate

Pin 7—Heater

Pin 8—Heater

Cap — Triode Grid

TRIODE UNIT AMPLIFIER—Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

PLATE DISSIPATION. 0.5 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Characteristics:

Plate Voltage. 50 100 250 . . volts

Grid Voltage. 0 -1 -2 . . volts

Grid Resistor. 10 0 0 . . megohms

Amplification Factor 85 100 100

Plate Resistance 285000 110000 91000 . . ohms

Transconductance 300 900 1100 . . μmhos

Plate Current. 0.07 0.4 0.9 . . ma

AUGUST 29, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6S8-GT



6S8-GT

TRIPLE DIODE—HIGH-MU TRIODE

DIODE UNITS

Maximum Ratings, Design-Center Values:

PLATE CURRENT (For Each Diode) 1.0 max. ma

Diode Considerations:

Diode units No.2 & No.3 and the triode unit have a common cathode, and diode unit No.1 has a separate cathode. Diodes No.1 (pins 3 & 5) and No.3 (pins 1 & 2) are recommended for use in FM detector applications, while diode No.2 (pins 4 & 2) is recommended for use as an AM detector.

Further consideration of these units, including diode curves, is given at the front of this section. Diode biasing of the triode unit of the 6S8-GT is not suitable.

AUGUST 29, 1947

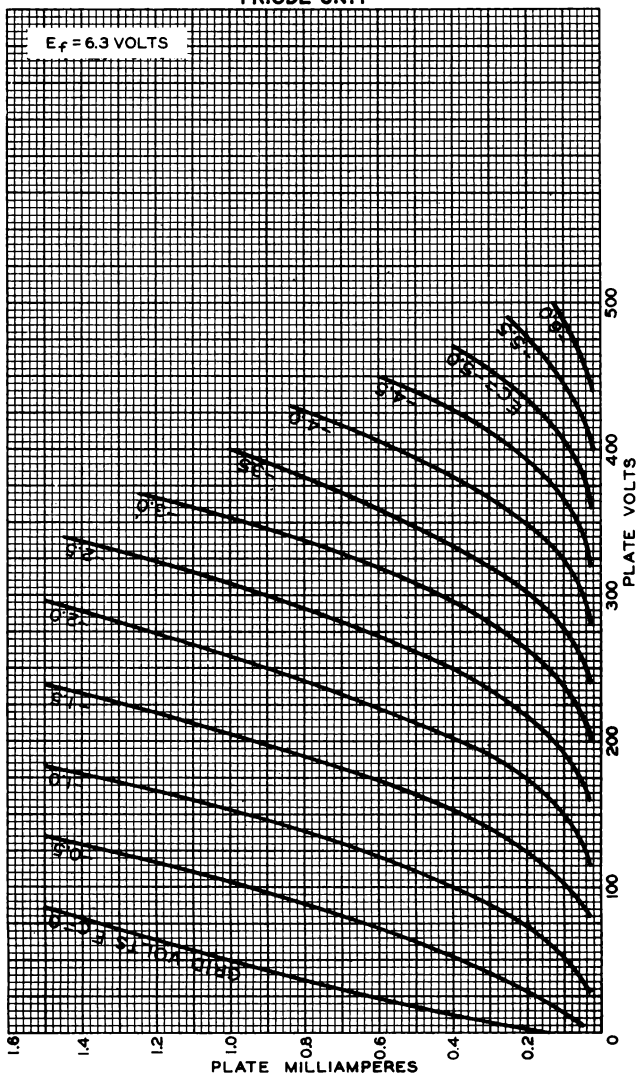
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



6S8-GT

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



JULY 25, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

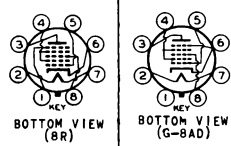
92CM-6876



6SA7, 6SA7-GT/G

PENTAGRID CONVERTER

6SA7
6SA7-GT/G

Heater ■		Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts	
Current	0.3	amp.	
Direct Interelectrode Capacitances:			
	6SA7	6SA7-GT/G	
Grid #3 to All Other Electrodes (R-F Input)	9.5▲	11▲▲	μuf
Plate to All Other Electrodes (Mixer Output)	12▲	11▲	μuf
Grid #1 to All Other Electrodes (Osc. Input)	7▲	8▲	μuf
Grid #3 to Plate	0.13 max.▲	0.5 max.▲	μuf
Grid #3 to Grid #1	0.15 max.▲	0.4 max.▲	μuf
Grid #1 to Plate	0.06 max.▲	0.2 max.▲	μuf
Grid #1 to Shell, Grid #5, and All Other Electrodes except Cathode	4.4	-	μuf
Grid #1 to All Other Electrodes except Cathode & Grid #5	-	5	μuf
Grid #1 to Cathode	2.6	-	μuf
Grid #1 to Cathode & Grid #5	-	3	μuf
Cathode to Shell, Grid #5, and All Other Electrodes except Grid #1	5	-	μuf
Cathode and Grid #5 to All Other Electrodes except Grid #1	-	14	μuf
Maximum Overall Length	2-5/8"	3-5/16"	
Maximum Seated Height	2-1/16"	2-3/4"	
Maximum Diameter	1-5/16"	1-5/16"	
Bulb	Metal Shell MT-8		T-9
Base	{ Small Wafer		{ Intermed. Sh.
	{ Octal 8-Pin		{ Octal 8-Pin
Pin 1 { 6SA7, Shell, Grid #5			
Pin 2 - Heater			
Pin 3 - Plate			
Pin 4 - Grids #2 & #4			
Pin 5 - Grid #1			
Pin 6 { 6SA7, Cathode			
Pin 7 - Heater			
Pin 8 - Grid #3			
Mounting Position	Any		

Maximum And Minimum Ratings Are Design-Center Values

CONVERTER SERVICE

Plate Voltage	300 max. volts
Grids #2 & #4 Voltage	100 max. volts
Grids #2 & #4 Supply Voltage	300 max. volts
Grid #3 Voltage *	0 min. volts
Plate Dissipation	1.0 max. watt
Screen Dissipation	1.0 max. watt
Total Cathode Current	14 max. ma.

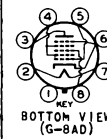
■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ With shell connected to cathode.

▲▲ With external shield connected to cathode.

* For self-excited oscillator.

← Indicates a change.



Jan. 1, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6SA7
6SA7-GT/G



6SA7, 6SA7-GT/G PENTAGRID CONVERTER

(continued from preceding page)

Characteristics:

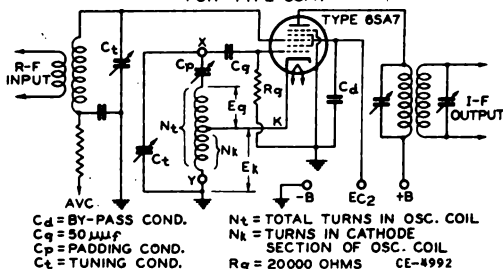
	Self-excitation*		Separate Excitation	
Plate Voltage	100	250	100	250 volts
Grids #2 & #4 Volt.	100	100	100	100 volts
Grid #3 (Control) Volt.	0	0	-2	-2 volts
Grid #1 Resistor	20000	20000	20000	20000 ohms
Plate Res. (Approx.)	0.5	1.0	0.5	1.0 megohm
Conversion Transcond.	425	450	425	450 μ hos
Conversion Transcond. (Approx.) †	2	2	2	2 μ hos
Plate Current	3.3	3.5	3.3	3.5 ma.
Grids #2 & #4 Current	8.5	8.5	8.5	8.5 ma.
Grid #1 Current	0.5	0.5	0.5	0.5 ma.
Total Cathode Current	12.3	12.5	12.3	12.5 ma.

NOTE: The transconductance between Grid #1 and Grids #2 & #4 connected to plate (not oscillating) is approximately 4500 μ hos under the following conditions: Grids #1, #3, and shell at 0 volts; Grids #2 & #4 and plate at 100 volts.

* Characteristics are approximate only and are shown for a Hartley circuit with a feedback of approximately 2 volts peak in the cathode circuit.

† With Grid #3 bias of -35 volts.

TYPICAL SELF-EXCITED CONVERTER CIRCUIT FOR TYPE 6SA7



The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.

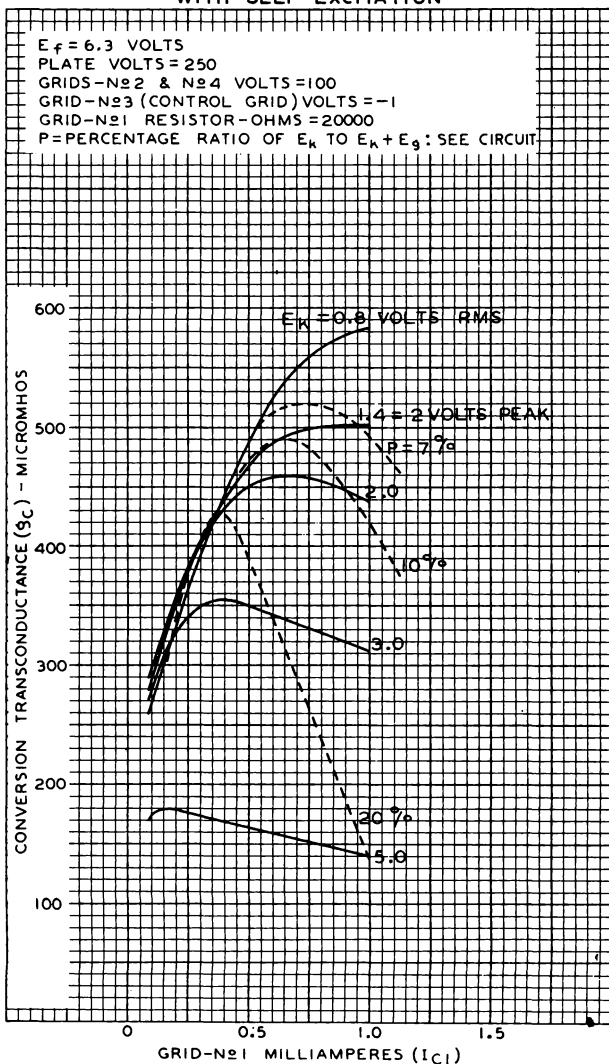
Jan. 1, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



6SA7

OPERATION CHARACTERISTICS
WITH SELF-EXCITATION

NOV. 2, 1938

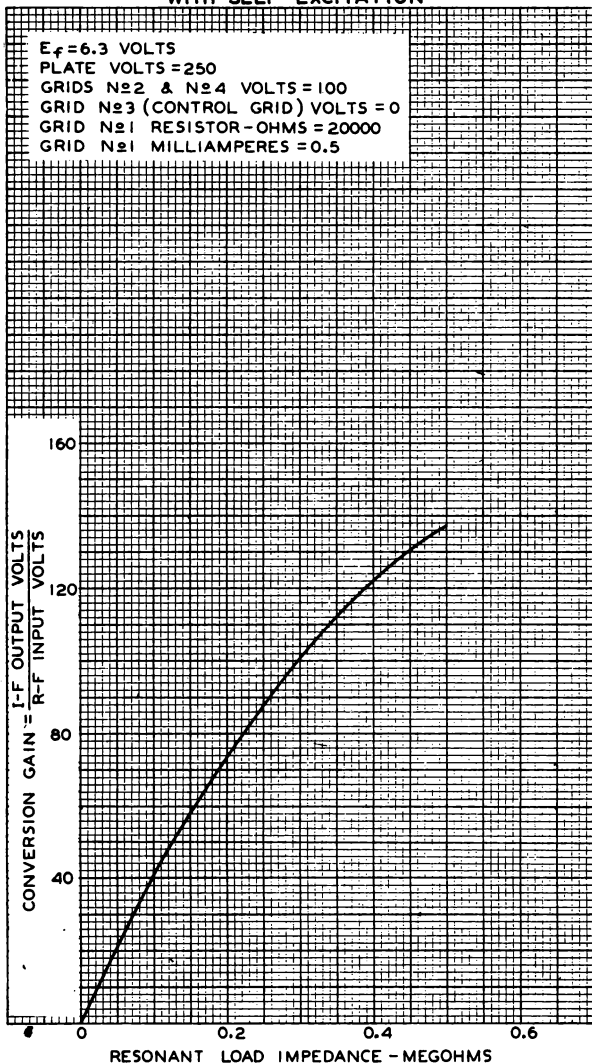
RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4993

6SA7



6SA7

OPERATION CHARACTERISTIC
WITH SELF-EXCITATION

APR. 25, 1941

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

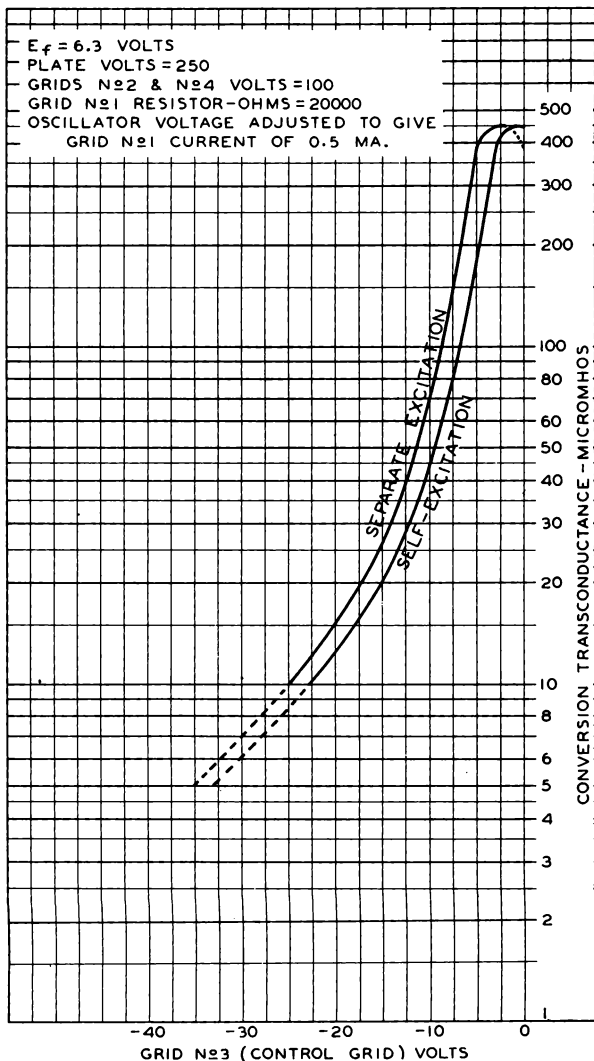
CE-4994



6SA7

6SA7

OPERATION CHARACTERISTICS



OCT. 25, 1938

RCA RADITRON DIVISION
RCA MANUFACTURING COMPANY, INC.

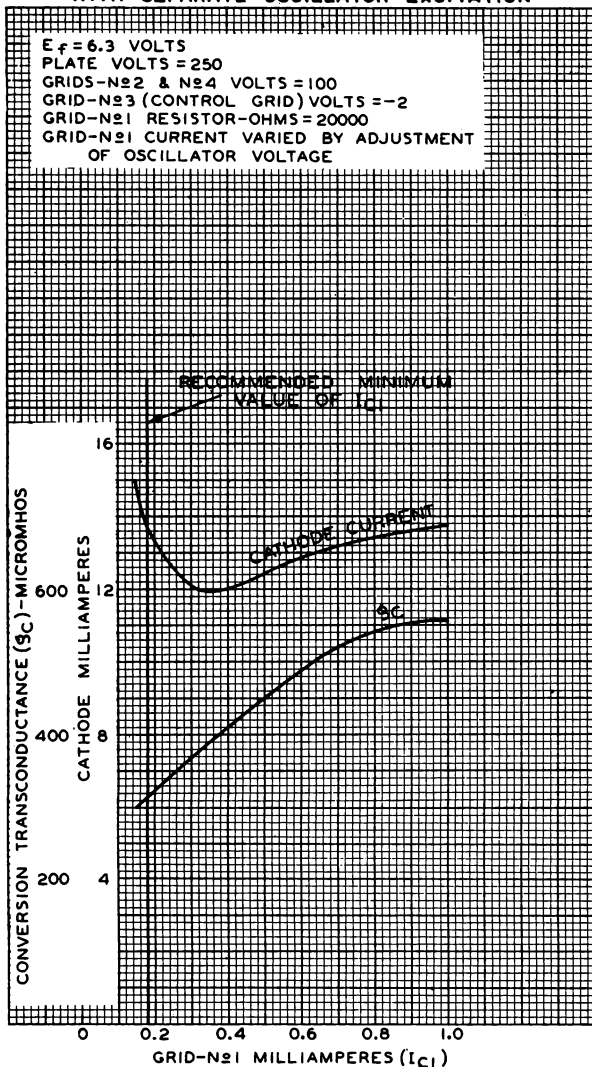
92C-4989

6SA7



6SA7

OPERATION CHARACTERISTICS WITH SEPARATE OSCILLATOR EXCITATION



APR. 24, 1941

 RCA RADOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-4990RI



6SB7-Y

6SB7-Y

PENTAGRID CONVERTER

SINGLE-ENDED METAL TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp.

Direct Interelectrode Capacitances:

Grid No.3 to All Other Electrodes

(RF Input)▲. 9.6 μf

Plate to All Other Electrodes

(Mixer Output)▲. 9.2 μf

Grid No.1 to All Other Electrodes

(Osc. Input)▲. 7.3 μf Grid No.3 to Plate▲. 0.13 max. μf Grid No.3 to Grid No.1▲. 0.16 max. μf Grid No.1 to Plate▲. 0.06 max. μf

Grid No.1 to All Other Electrodes and

Shell, Except Cathode 3.8 μf Grid No.1 to Cathode 3.4 μf

Cathode to All Other Electrodes and

Shell Except Grid No.1 4.5 μf

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-5/8"

Maximum Seated Length. 2-1/16"

Maximum Diameter 1-5/16"

Bulb MT-8G

Base Small Wafer Octal 8-Pin, Micanol

Basing Designation for BOTTOM VIEW 8R

Pin 1-Shell,

Grid No.5

Pin 2-Heater

Pin 3-Plate

Pin 4-Grids

No.2 & No.4



Pin 5-Grid No.1

Pin 6-Cathode

Pin 7-Heater

Pin 8-Grid No.3

CONVERTER SERVICE

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRIDS-No.2 & No.4 VOLTAGE 100 max. volts

GRIDS-No.2 & No.4 SUPPLY VOLTAGE. 300 max. volts

PLATE DISSIPATION. 2.0 max. watts

GRIDS-No.2 & No.4 DISSIPATION 1.5 max. watts

TOTAL CATHODE CURRENT. 22 max. ma.

GRID-No.3 VOLTAGE:

Negative Bias Voltage. 100 max. volts

Positive Bias Voltage. 0 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

▲ with shell connected to cathode.

APRIL 1, 1946

RCA VICTOR DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6SB7-Y



6SB7-Y

PENTAGRID CONVERTER

Characteristics - - Separate Excitation:*

Plate Voltage.	100	250	. . volts
Grids-No.2 & No.4 (Screen) Voltage	100	100	. . volts
Grid-No.3 (Control Grid) Voltage	-1.0	-1.0	. . volt
Grid-No.1 (Oscillator Grid) Resistor	20000	20000	. . ohms
Plate Resistance (Approx.) . .	0.5	1.0	. . Megohm
Conversion Transconductance. .	900	950	. . μ mhos
Conversion Transconductance**	3.5	3.5	. . μ mhos
Plate Current.	3.6	3.8	. . ma.
Grids-No.2 & No.4 Current . . .	10.2	10	. . ma.
Grid-No.1 Current	0.35	0.35	. . ma.
Total Cathode Current.	14.2	14.2	. . ma.

Typical Operation in FM Band (88-108 Mc):

(See circuit on following page)

Plate Voltage.	250	. . volts
Grids-No.2 & No.4 (Screen) Supply Voltage	250	. . volts
Grids-No.2 & No.4 Resistor	12000	. . ohms
Grid-No.1 Resistor	22000	. . ohms
Signal Frequency	88	108 Mc
Oscillation Frequency.	98.7	118.7 Mc
Plate Current.	6.8	6.5 ma.
Grids-No.2 & No.4 Current.	12.6	12.5 ma.
Grid-No.1 Current	0.130	0.140 ma.

NOTE: The transconductance between grid No.1 and grids No.2 & No.4 connected to plate (not oscillating) is approximately 8000 micromhos under the following conditions: signal applied to grid No.1 at zero-bias; grids-No.2 and No.4 and plate at 100 volts; grid No.3 grounded. Under the same conditions, the plate current is 32 milliamperes and the amplification factor is 16.5.

* The characteristics shown with separate excitation correspond very closely with those obtained in a self-excited oscillator circuit operating with zero bias.

** With grid-No.3 bias of -20 volts.

APRIL 1, 1946

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA 1



6SB7-Y

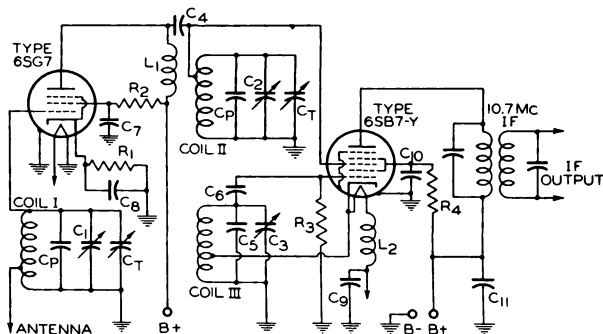
6SB7-Y

PENTAGRID CONVERTER

TYPICAL SELF-EXCITED CONVERTER CIRCUIT FOR TYPE 6SB7-Y WITH RF STAGE

88-108Mc

(SEE TYPICAL OPERATION)



C1 C2 C3 = GANGED TUNING CONDENSERS: 7 - 23 μ f

C4 C5 C6 = 22 μ f

C7 C8 C9 C10 C11 = BY-PASS CONDENSERS

Cp = PADDING CONDENSERS

Ct = TRIMMER CONDENSERS

L1 L2 = RF CHOKES

R1 = 68 OHMS

R2 = 33000 OHMS

R3 = 22000 OHMS

R4 = 12000 OHMS

COIL I = ANTENNA COIL*: 2 TURNS No.14 WIRE + 1-1/4"

LEAD No.20 WIRE. COIL TAPPED AT 1 TURN.

COIL II = INTERSTAGE COIL*: 2 TURNS No.14 WIRE + 1-1/4"

LEAD No.20 WIRE. COIL TAPPED AT 1-1/4 TURN.

COIL III = OSCILLATOR COIL*: 1-7/8 TURNS No.14 WIRE, NO

ADDED LEAD. COIL TAPPED AT 5/8 TURN.

* All coils 5/8" long, approx.

NOTE 1: All tap positions are approximate and should be adjusted to give stable operation.

NOTE 2: Insertion of a small non-inductive resistor of about 3 ohms in the circuit at grid-No.3 terminal of the 6SB7-Y is helpful in preventing oscillation at the signal frequency.

92CM-6650

APRIL 1, 1946

RCA VICTOR DIVISION

TENTATIVE DATA 2

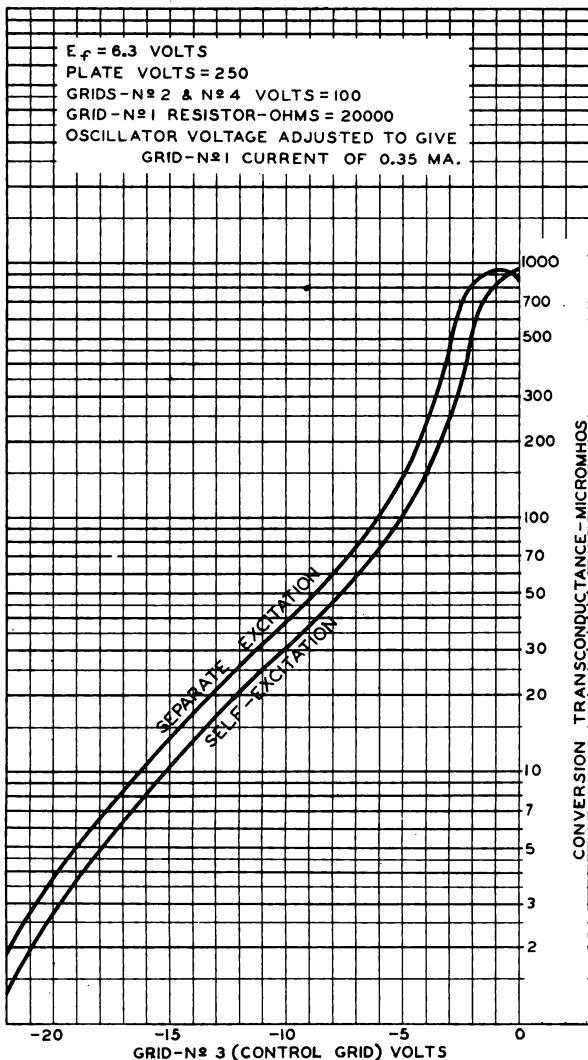
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6SB7-Y



6SB7-Y

OPERATION CHARACTERISTICS



NOV. 8, 1945

RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6619



6SB7-Y

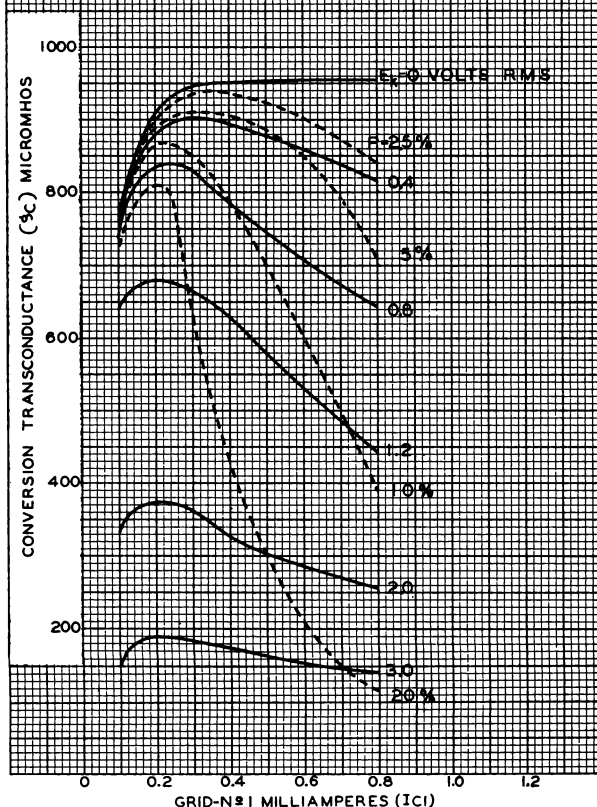
6SB7-Y

OPERATION CHARACTERISTICS
WITH SELF-EXCITATION

$E_f = 6.3$ VOLTS
PLATE VOLTS = 250
GRIDS-N^o 2 & N^o 4 VOLTS = 100
GRID-N^o 3 (CONTROL GRID) VOLTS = -1
GRID-N^o 1 RESISTOR-OHMS = 20000
P-PERCENTAGE RATIO OF E_k TO $E_k + E_g$, WHERE

E_k = VOLTAGE ACROSS OSCILLATOR-COIL SECTION
BETWEEN GROUND AND CATHODE, AND

E_g = OSCILLATOR VOLTAGE BETWEEN CATHODE
AND GRID



NOV. 20 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

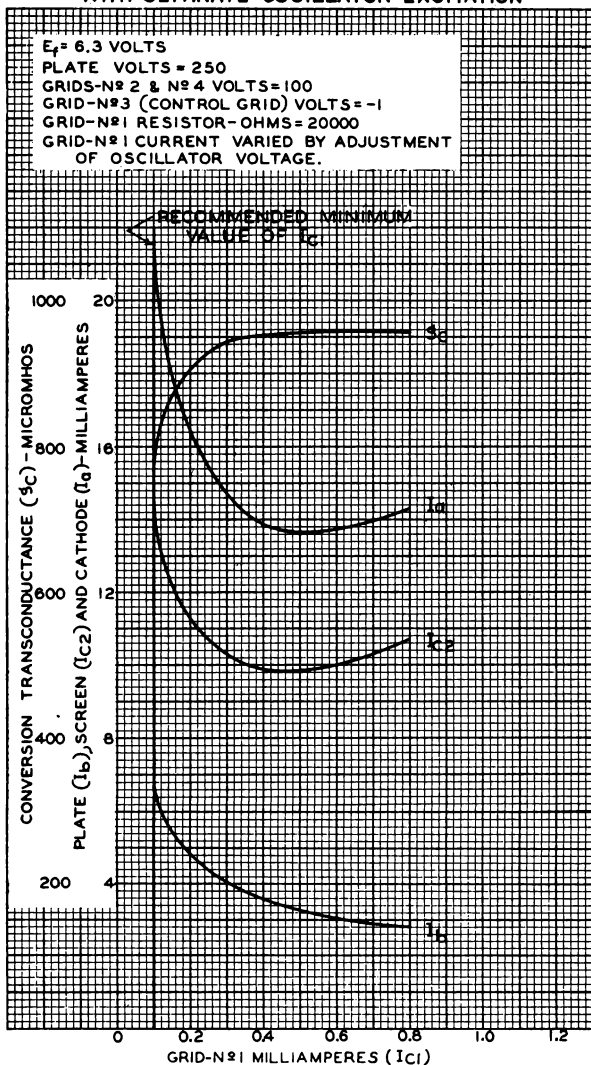
92CM-6635

6SB7-Y



6SB7-Y

OPERATION CHARACTERISTICS WITH SEPARATE OSCILLATOR EXCITATION



NOV. 20, 1945

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6634



6SC7

6SC7

HIGH-MU TWIN TRIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances (Approx.):*

Grid to plate 2 μf Grid to cathode, heater, and shell 2 μf ←Plate to cathode, heater, and shell 3 μf

Mechanical:

Mounting Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-1/16"

Maximum Diameter 1-5/16"

Bulb Metal Shell, MT-8

Base Small-Wafer Octal 8-Pin (JETEC No. B8-21)

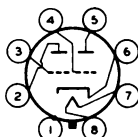
Basing Designation for BOTTOM VIEW 8S

Pin 1 - Shell Pin 5 - Plate of Unit No.1

Pin 2 - Plate of Unit No.2

Pin 3 - Grid of Unit No.2

Pin 4 - Grid of Unit No.1

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 250 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts ←

Heater positive with respect to cathode 90 max. volts

Characteristics:

Plate Voltage 250 volts

Grid Voltage -2 volts

Amplification Factor 70

Plate Resistance (Approx.) 53000 ohms

Transconductance (Approx.) 1325 μhos

Plate Current 2 ma

Typical Operation as Resistance-Coupled Amplifier: ←

See RESISTANCE-COUPLED AMPLIFIER CHART No. 17
at front of this Section

* values for each unit with pin 1 connected to pin 6.

← indicates a change.

NOV. 5, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

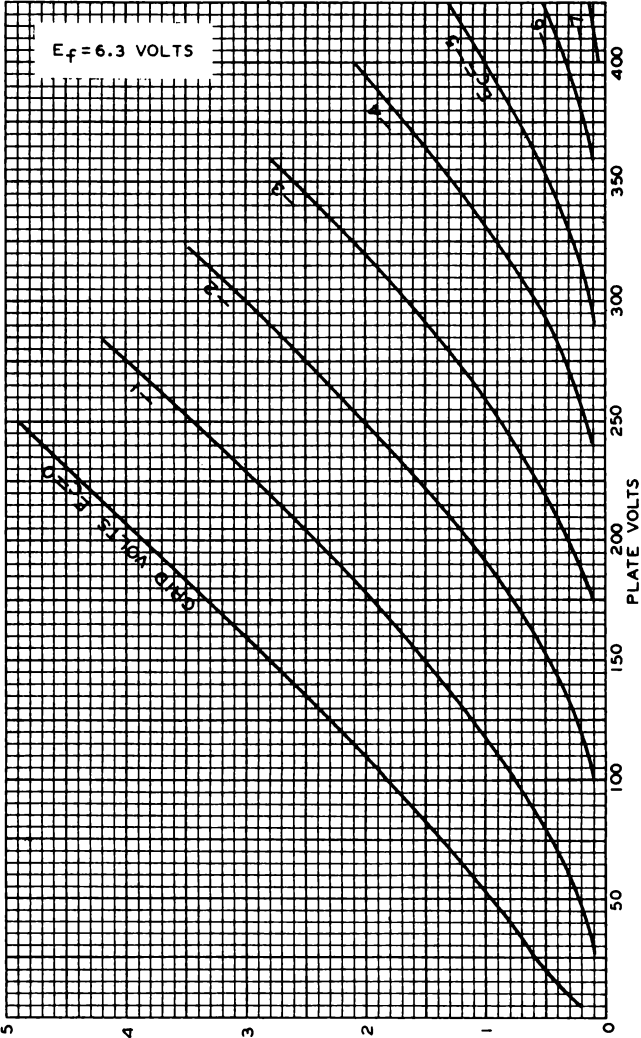
DATA

6SC7



6SC7

AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT



OCT. 16, 1940

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6096R1



6SF5, 6SF5-GT HIGH-MU TRIODE



6SF5
6SF5-GT

Heater	Coated Unipotential Cathode		
Voltage	6.3	a-c or d-c volts	
Current	0.3	amp.	
Direct Interelectrode Cap.	6SF5 ▲	6SF5-GT	
Grid to Plate	2.4	-	μuf
Grid to Cathode	4.0	-	μuf
Plate to Cathode	3.6	-	μuf
Maximum Overall Length	2-5/8"	3-5/16"	
Maximum Seated Height	2-1/16"	2-3/4"	
Maximum Diameter	1-5/16"	1-5/16"	
Bulb	Metal Shell MT-8	T-9	
Base	{ Small Wafer Octal 6-Pin	{ Intermed. Shell Octal 6-Pin	
Basing Designation	6AB	G-6AB	
Pin 1 { 6SF5, Shell 6SF5-GT, No Con.		Pin 5 - Plate	
Pin 2 - Cathode		Pin 7 - Heater	
Pin 3 - Grid		Pin 8 - Heater	
Mounting Position		Any	
BOTTOM VIEW			
AMPLIFIER			
Plate Voltage		300 max.	volts
Characteristics - Class A ₁ Amplifier:			
Plate	100	250	volts
Grid	-1	-2	volts
Amp. Fact.	100	100	
Plate Res.	85000	66000	ohms
Transcond.	1150	1500	μmhos
Plate Cur.	0.4	0.9	ma.
Typical Operation - Resistance Coupled Amplifier:			
Same as 6F5 in RESISTANCE-COUPLED AMPLIFIER CHART.			
■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible. ▲ With shell connected to cathode. Values are approximate.			
The curve under Type 6F5 also applies to the 6SF5 and 6SF5-GT.			

← Indicates a change.

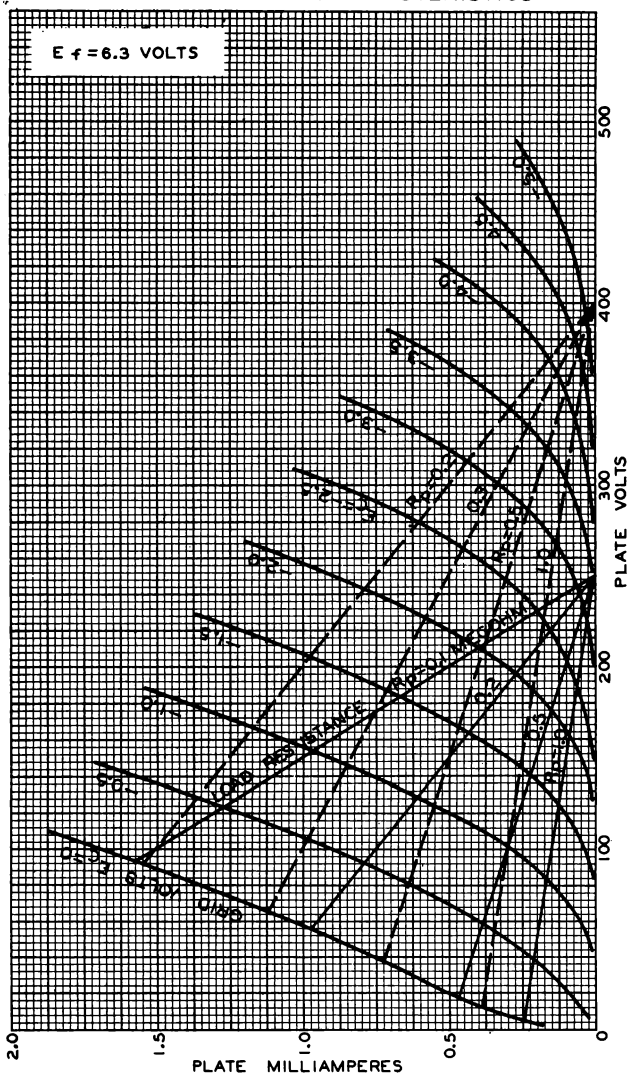
May 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

6SF5

AVERAGE PLATE CHARACTERISTICS



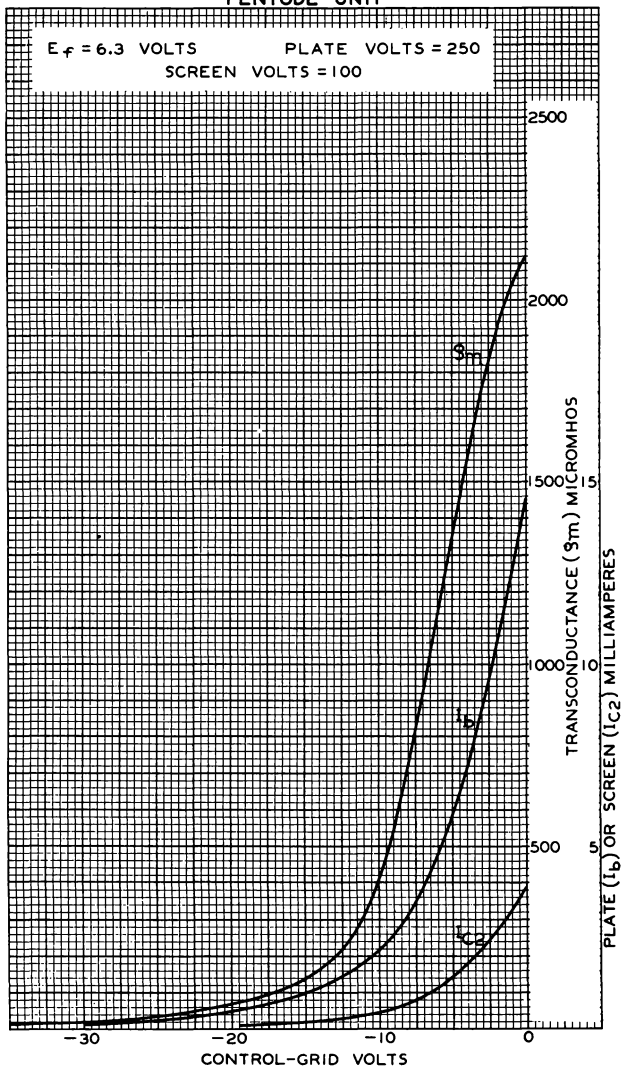
SEPT. 23 1938

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4974



6SF7

AVERAGE PLATE CHARACTERISTICS
PENTODE UNIT

FEB. 20, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6256

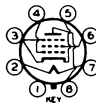


6SG7

H-F AMPLIFIER PENTODE

SINGLE-ENDED METAL TYPE WITH SEMI-REMOTE CUT-OFF

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances: ^o		
Grid to Plate	0.003 max.	μuf
Input	8.5	μuf
Output	7.0	μuf
Maximum Overall Length		2-5/8"
Maximum Seated Height		2-1/16"
Maximum Diameter		1-5/16"
Bulb	Metal Shell, MT-8	
Base	Small Wafer Octal, 8-Pin	
Pin 1 - Shell		Pin 5 - Cathode
Pin 2 - Heater		Pin 6 - Screen
Pin 3 - Cathode		Pin 7 - Heater
Pin 4 - Grid		Pin 8 - Plate
Mounting Position		Any



BOTTOM VIEW (8BK)

Maximum And Minimum Ratings Are Design-Center Values
AMPLIFIER

Plate Voltage	300 max. volts
Screen Voltage	200 max. volts
Screen Supply Voltage	300 max. volts
Grid Voltage	0 min. volts
Plate Dissipation	3 max. watts
Screen Dissipation	0.6 max. watt

Typical Operation and Characteristics—Class A₁ Amplifier:

Plate Voltage	100	250	250	volts
Screen Voltage	100	125	150	volts
Grid Voltage	-1	-1	-2.5	volts
Suppressor	Connected to pin #3 internally			
Plate Resistance (Approx.)	0.25	0.9	#	megohm
Transconductance	4100	4700	4000	μmbos
Grid Bias*	-11.5	-14	-17.5	volts
Plate Current	8.2	11.8	9.2	ma.
Screen Current	3.2	4.4	3.4	ma.

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

Greater than 1 megohm.

* Approximate, for transconductance of 40 micromhos.

° With shell connected to cathode.

← Indicates a change.

May 1, 1942

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

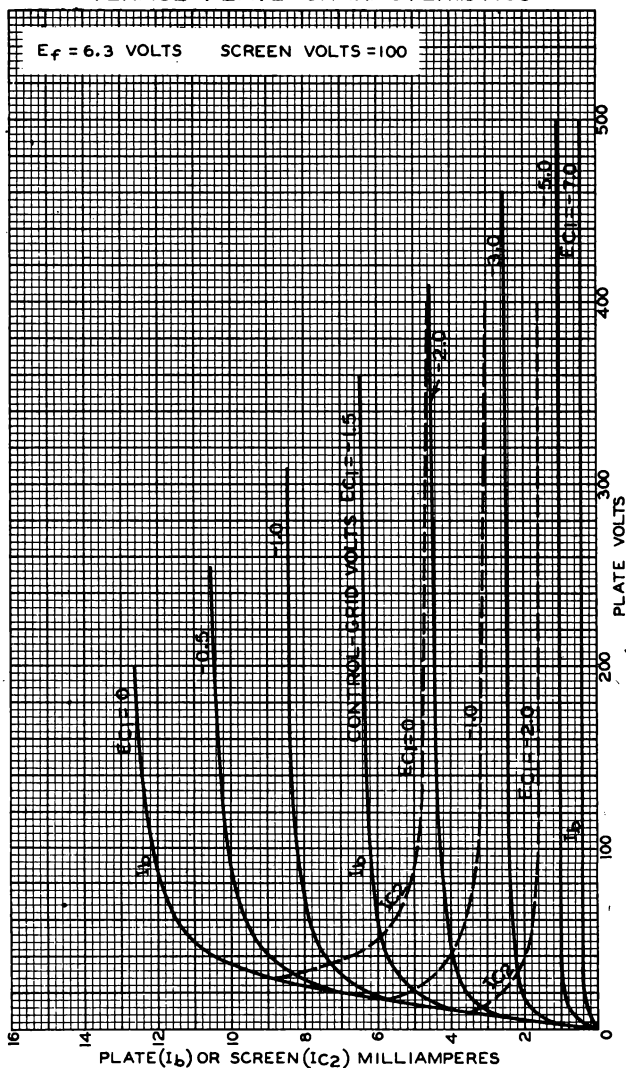
TENTATIVE DATA

6SG7



6SG7

AVERAGE PLATE CHARACTERISTICS



APRIL 16, 1942

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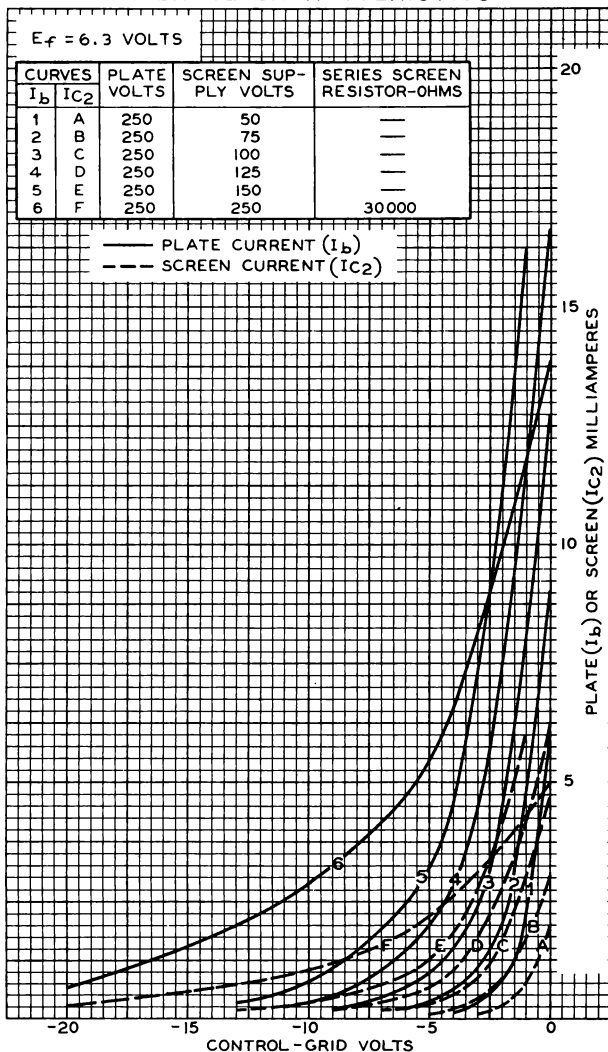
92C-6253R2



6SG7

6SG7

AVERAGE CHARACTERISTICS



APRIL 16, 1942

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6248R2

6SG7

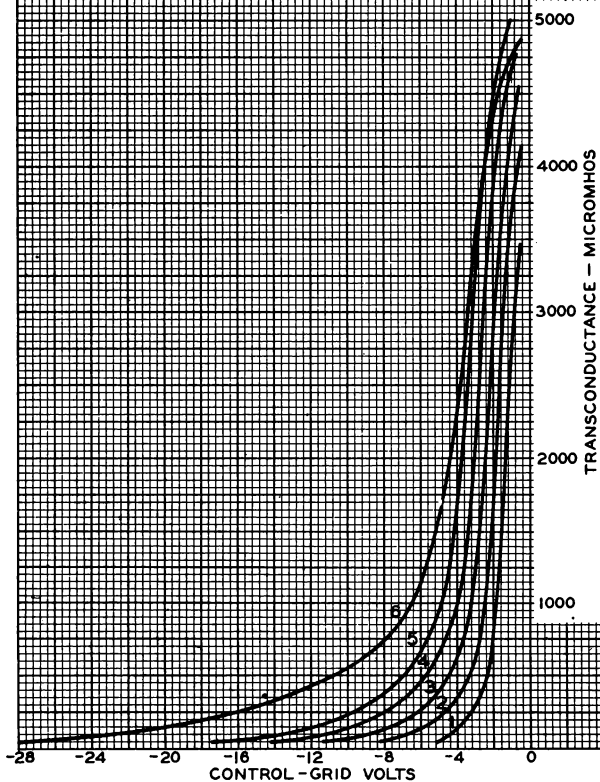


6SG7

AVERAGE CHARACTERISTICS

 $E_f = 6.3$ VOLTS

CURVE	PLATE VOLTS	SCREEN SUPPLY VOLTS	SERIES SCREEN RESISTOR-OHMS
1	250	50	—
2	250	75	—
3	250	100	—
4	250	125	—
5	250	150	—
6	250	250	30000



APRIL 16, 1942

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6245R2



6SH7

H-F AMPLIFIER PENTODE

SINGLE-ENDED METAL TYPE WITH SHARP CUT-OFF

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	0.003 max.	μpf
Input	8.5	μpf
Output	7.0	μpf
Maximum Overall Length		2-5/8"
Maximum Seated Height		2-1/16"
Maximum Diameter		1-5/16"
Bulb		Metal Shell, MT-8
Base		Small Wafer Octal, 8-Pin
Pin 1-Shell		Pin 5-Cathode
Pin 2-Heater		Pin 6-Screen
Pin 3-Cathode		Pin 7-Heater
Pin 4-Grid		Pin 8-Plate
Mounting Position	BOTTOM VIEW (8BK)	Any



Maximum And Minimum Ratings Are Design-Center Values

AMPLIFIER

Plate Voltage	300 max.	volts
Screen Voltage	150 max.	volts
Screen Supply Voltage	300 max.	volts
Grid Voltage	0 min.	volts
Plate Dissipation	3 max.	watts
Screen Dissipation	0.7 max.	watt

Typical Operation and Characteristics - Class A_1 Amplifier:

Plate Voltage	100	250	volts
Screen Voltage	100	150	volts
Grid Voltage	-1	-1	volts
Plate Resistance	0.35	0.9 approx.	megohm
Transconductance	4000	4900	μmhos
Grid Bias for			
Plate Current = 10 $\mu\text{amp.}$	-4	-5.5	volts
Plate Current	5.3	10.8	ma.
Screen Current	2.1	4.1	ma.

NOTE: This type is not recommended for high-gain audio amplifier applications because undesirable hum may be encountered.

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

○ With shell connected to cathode.

← Indicates a change.

June 1, 1942

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

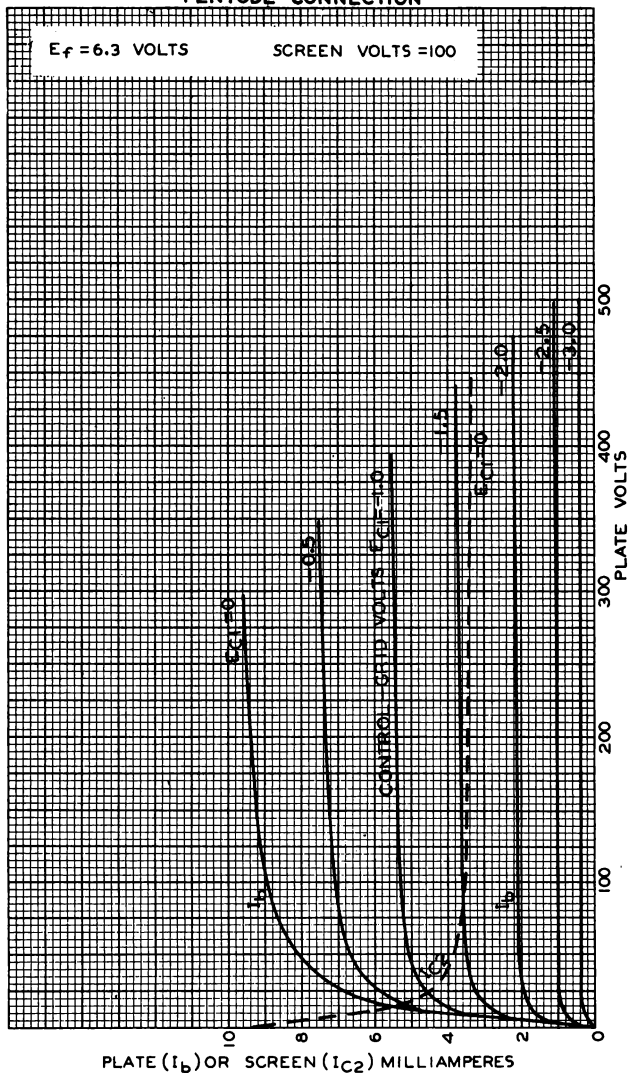
TENTATIVE DATA

6SH7



6SH7

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



JULY 24, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

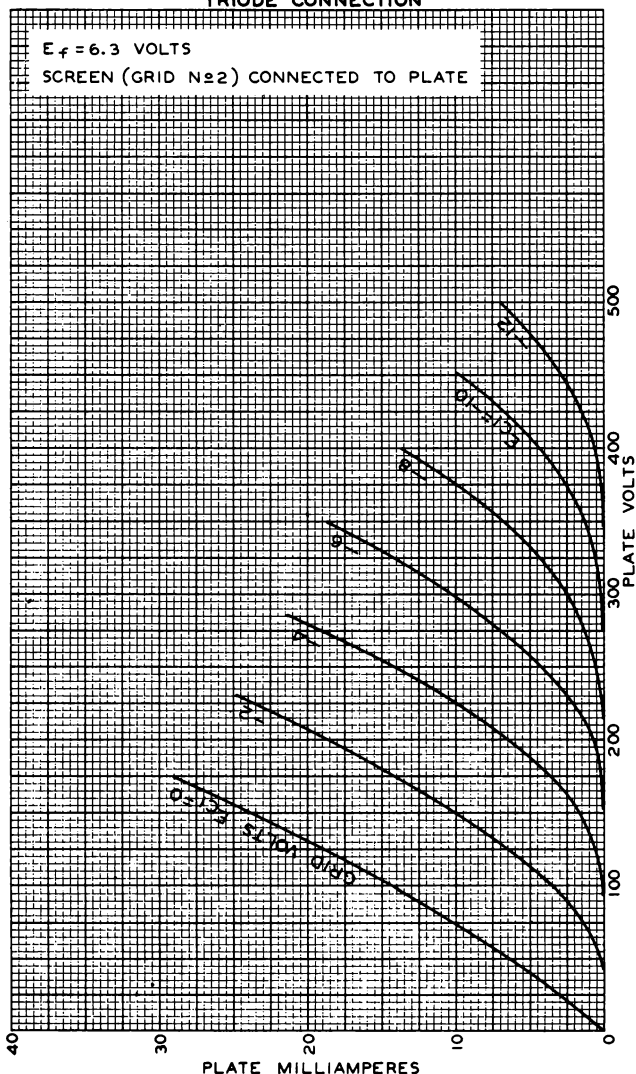
92C-6300



6SH7

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION

6SH7



MAY 11, 1942

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

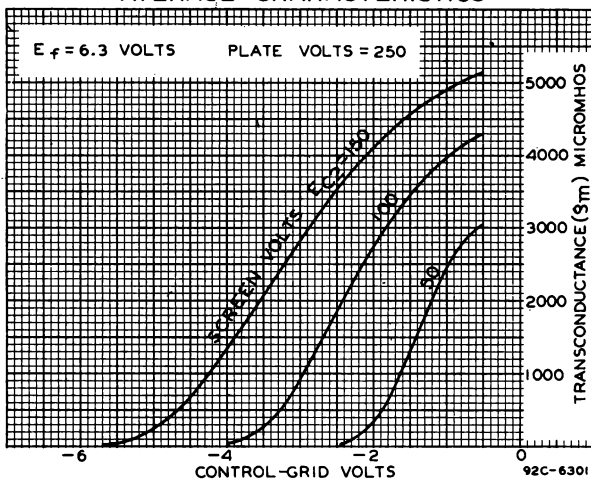
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6SH7

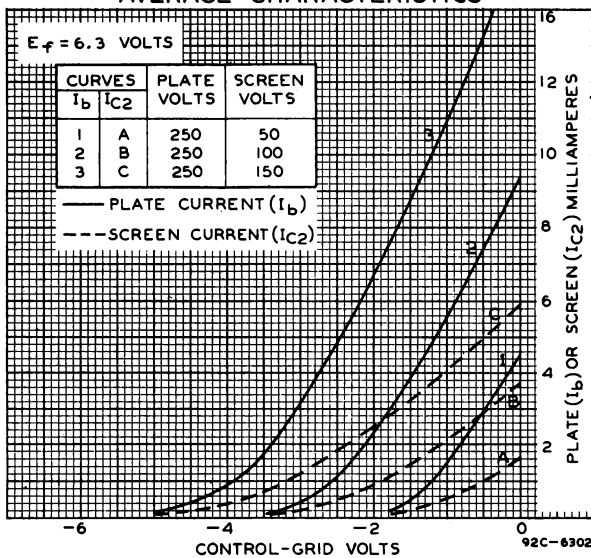


6SH7

AVERAGE CHARACTERISTICS



AVERAGE CHARACTERISTICS



MAY 14, 1942

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6401



6 SJ7, 6SJ7-GT SHARP-CUTOFF PENTODE

6SJ7
6SJ7-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances:

Pentode Connection:	6SJ7 ^o	6SJ7-GT ^{oo}	
Grid No.1 to Plate .	0.005 max.	0.005 max.	$\mu\mu\text{f}$
Input.	6	7	$\mu\mu\text{f}$ ←
Output.	7	7	$\mu\mu\text{f}$ ←
Triode Connection:*			
Grid No.1 to Plate .	2.8	2.8	$\mu\mu\text{f}$
Grid No.1 to Cathode.	3.4	3.4	$\mu\mu\text{f}$
Plate to Cathode . .	11	11	$\mu\mu\text{f}$

^o With shell connected to cathode.

^{oo} With external shield connected to cathode.

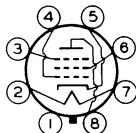
* With grid No.2 and grid No.3 connected to plate.

Mechanical:

Mounting Position. . . .	Any	Any
Maximum Overall Length .	2-5/8"	3-5/16"
Maximum Seated Length. .	2-1/16"	2-3/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell, MT8G	T-9
Base	{ Small-Wafer Octal 8-Pin	Sm.-Wafer Octal 8-Pin, Sleeve
Basing Designation . . .	8N	GT-8N

BOTTOM VIEW

Pin 1 { 6SJ7, Shell
6SJ7-GT,
Base Sleeve
Pin 2-Heater
Pin 3-Grid No.3



Pin 4-Grid No.1
Pin 5-Cathode
Pin 6-Grid No.2
Pin 7-Heater
Pin 8-Plate

AMPLIFIER - Class A₁

Pentode Connection

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	125 max.	volts
GRID-No.2 SUPPLY VOLTAGE	300 max.	volts
PLATE DISSIPATION.	2.5 max.	watts
GRID-No.2 DISSIPATION.	0.7 max.	watt ←
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value.	0 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	90 max.	volts ←
Heater positive with respect to cathode .	90 max.	volts

← Indicates a change.

JUNE 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6SJ7
6SJ7-GT



6SJ7, 6SJ7-GT SHARP-CUTOFF PENTODE

Typical Operation and Characteristics:

Plate voltage.	100	250	.. volts
Grid No.3 (Suppressor)	Connected to cathode at socket		
Grid-No.2 Voltage.	100	100	.. volts
Grid-No.1 Voltage.	-3	-3	.. volts
Plate Resistance (Approx.)	0.7	#	.. megohm
Transconductance	1575	1650	.. μ mhos
Grid-No.1 Bias (Approx.) for plate current of 10 μ amp	-8	-8	.. volts
Plate Current.	2.9	3.0	.. ma
Grid-No.2 Current.	0.9	0.8	.. ma

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	1 max. megohm
--	---------------

AMPLIFIER - Class A₁

Triode Connection - Grids No.2 and No.3 Connected to Plate

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	250 max.	volts
PLATE DISSIPATION (Total).	2.5 max.	watts
GRID-No.1 VOLTAGE:		
Positive bias value.	0 max.	volts
→ PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage.	180	250	.. volts
Grid-No.1 Voltage.	-6	-8.5	.. volts
Amplification Factor	19	19	
Plate Resistance (Approx.)	8250	7600	.. ohms
Transconductance	2300	2500	.. μ mhos
Plate Current.	6.0	9.2	.. ma

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	1 max. megohm
--	---------------

Greater than 1 megohm.

*For additional data, see RESISTANCE-COUPLED AMPLIFIER CHART
at the front of this Section*

→ Indicates a change.

JUNE 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

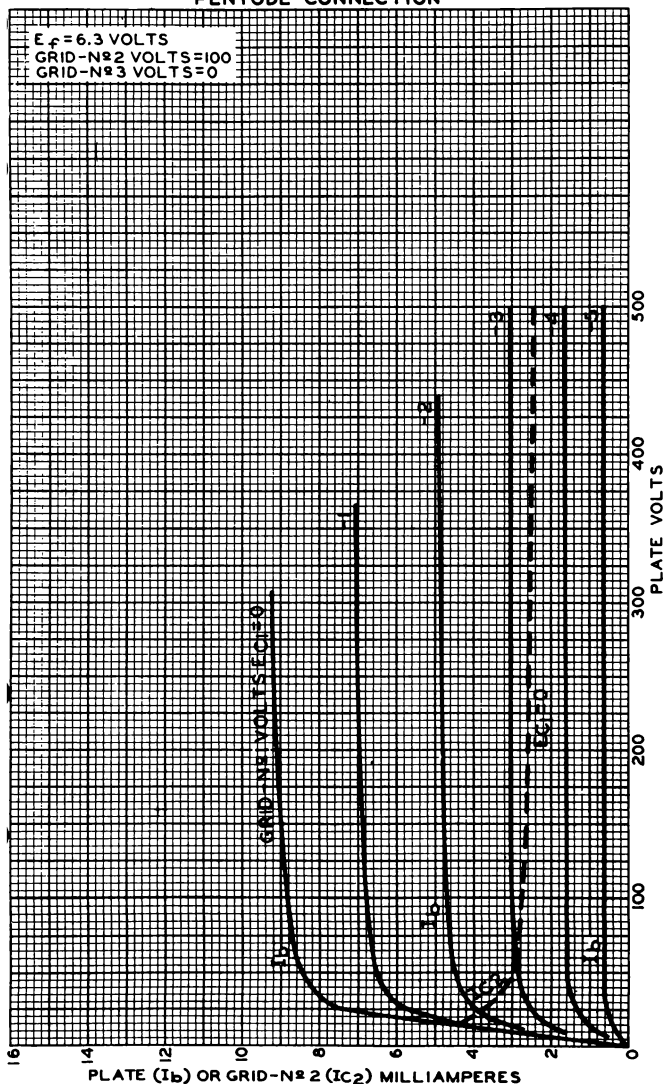
DATA



6SJ7

6SJ7

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



OCT. 16, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

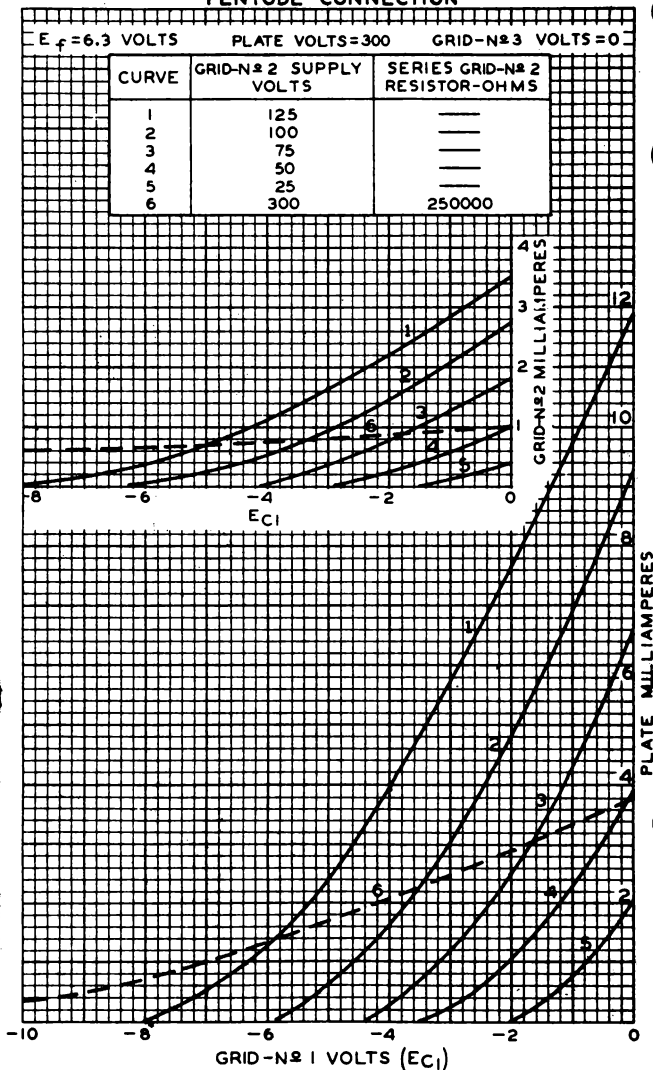
92CM-4939R1

6SJ7



6SJ7

AVERAGE CHARACTERISTICS PENTODE CONNECTION



MARCH 5, 1948

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6443R1



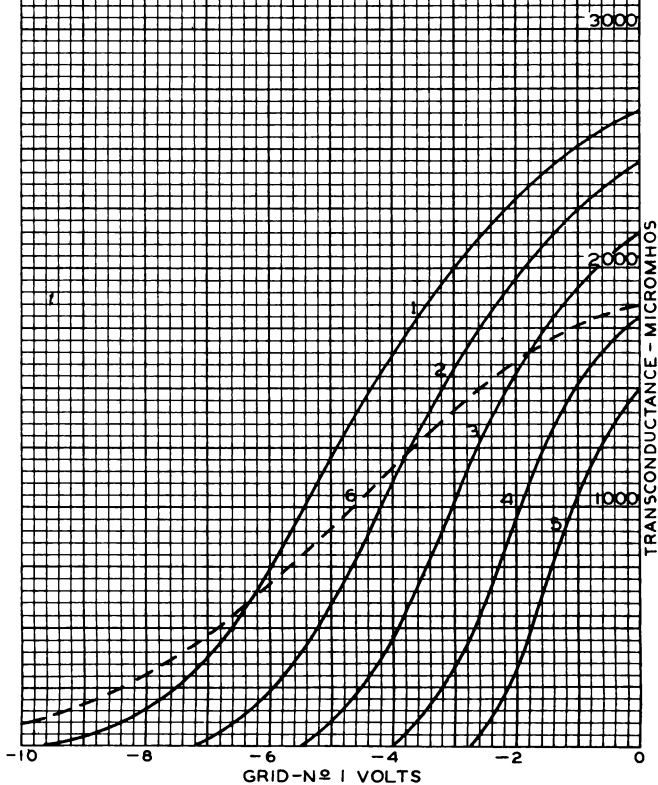
6SJ7

AVERAGE CHARACTERISTICS
PENTODE CONNECTION $E_f = 6.3$ VOLTS

PLATE VOLTS = 300

GRID-Nº 3 VOLTS = 0

CURVE	GRID-Nº 2-SUPPLY VOLTS	SERIES GRID-Nº 2 RESISTOR-OHMS
1	125	—
2	100	—
3	75	—
4	50	—
5	25	—
6	300	250000



MARCH 5, 1948

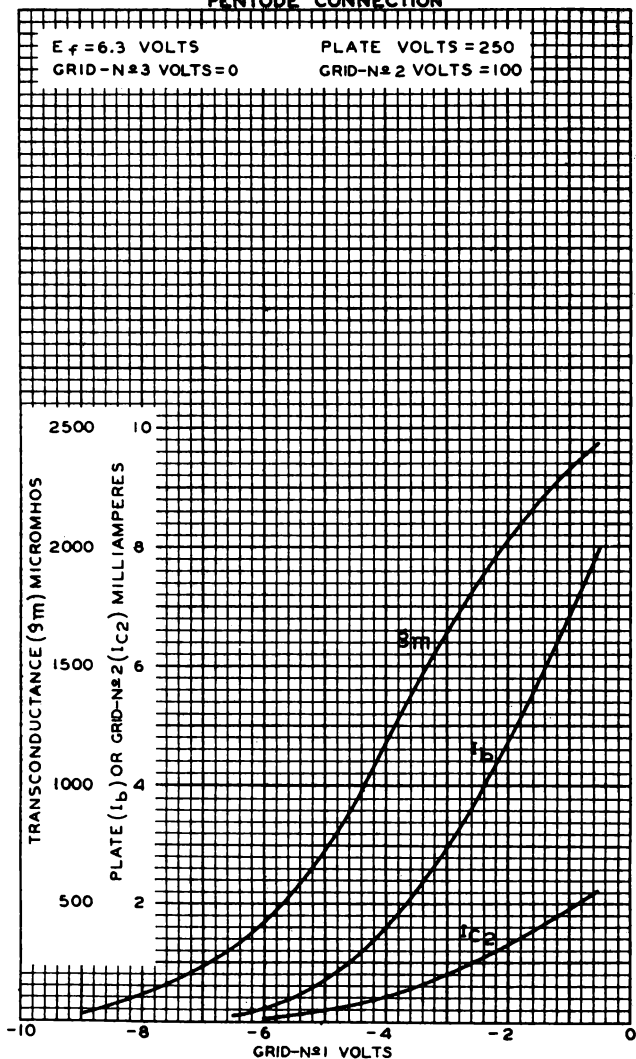
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6444R1

6SJ7



6SJ7

AVERAGE CHARACTERISTICS
PENTODE CONNECTION

MARCH 5, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

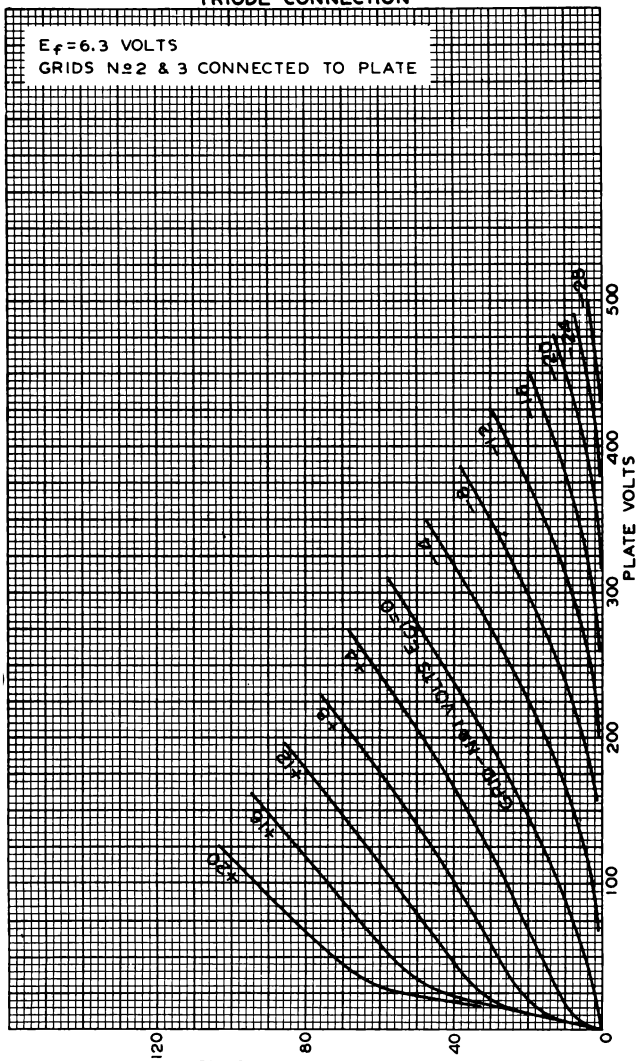
92CM-4937R1



6SJ7

6SJ7

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



MAY 12, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6409R1



6SK7, 6SK7-GT/G

6SK7
6SK7-GT/G

TRIPLE-GRID SUPER-CONTROL AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
	6SK7	6SK7-GT/G
Direct Interelectrode Cap.	▲	▲▲
Grid to Plate	0.003 max.	0.005 max. μ f
Input	6.0	6.5 μ f
Output	7.0	7.5 μ f
Maximum Overall Length	2-5/8"	3-5/16"
Maximum Seated Height	2-1/16"	2-3/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell, MT-8	T-9
Base	{ Small Wafer Octal 8-Pin	{ Small Wafer Octal 8-Pin, Sleeve
Basing Designation	8N	GT-8N
Pin 1 { 6SK7, Shell 6SK7-GT/G, Base Sleeve		Pin 4-Grid
Pin 2-Heater		Pin 5-Cathode
Pin 3-Suppressor		Pin 6-Screen
Pin 4-Grid		Pin 7-Heater
Pin 5-Cathode		Pin 8-Plate
Pin 6-Screen		
Pin 7-Heater		
Pin 8-Plate		
Mounting Position	BOTTOM VIEW	Any

Maximum And Minimum Ratings Are Design-Center Values
AMPLIFIER

Plate Voltage	300 max.	volts
Screen Voltage	125 max.	volts
Screen Supply Voltage	300 max.	volts
Grid Voltage	0 min.	volts
Plate Dissipation	4.0 max.	watts
Screen Dissipation	0.4 max.	watt
Typical Operation and Characteristics - Class A ₁ Amplifier:		
Plate	100	250 volts
Screen	100	100 volts
Grid	-1	-3 volts
Suppressor	Connected to cathode at socket	
Plate Res.	0.12	0.8 approx. megohm
Transconc.	2350	2000 μ hos
Grid Bias for		
transconc. of 10 μ hos	-35	-35 volts
Plate Cur.	13	9.2 ma.
Screen Cur.	4.0	2.6 ma.

■ In circuits where the cathode is not connected directly to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ With shell connected to cathode.

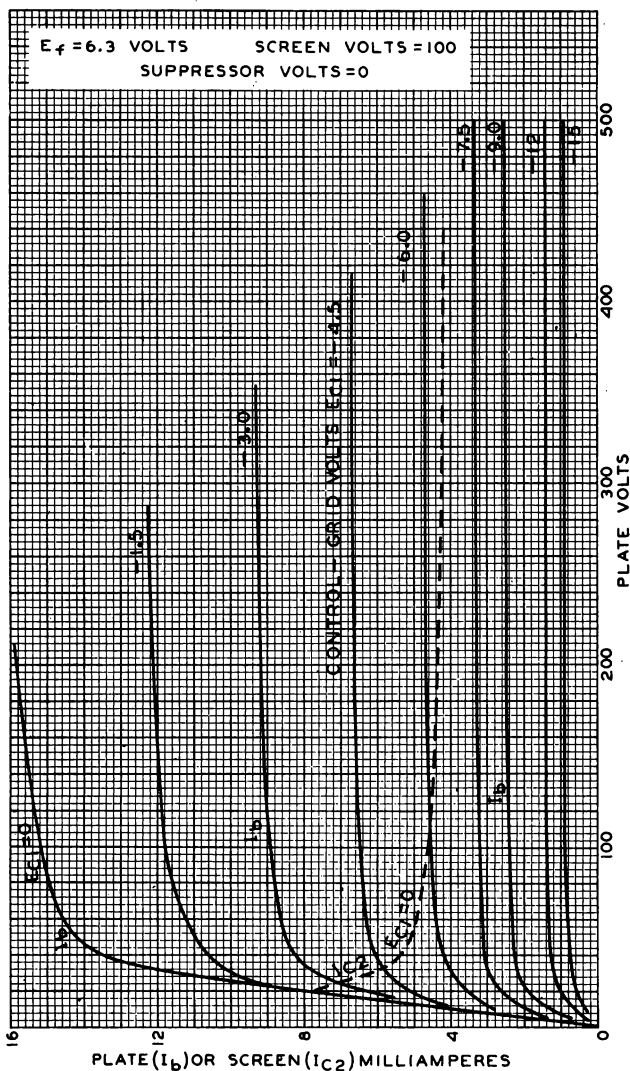
▲▲ With shield connected to cathode.

6SK7



6SK7

AVERAGE PLATE CHARACTERISTICS



JUNE 24, 1938

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

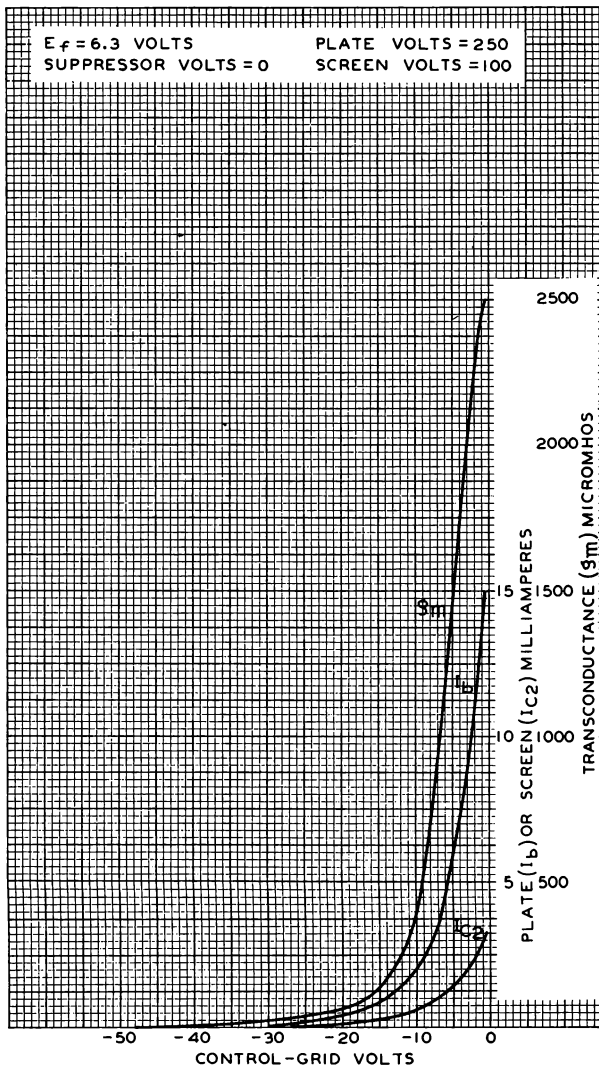
92C-4940



6SK7

6SK7

AVERAGE CHARACTERISTICS



JUNE 23, 1938

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4938



6SL7-GT

6SL7-GT

HIGH-MU TWIN TRIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances (Approx.):^o

	Unit No.1	Unit No.2	
Grid to plate	2.8	2.8	μf
Grid to cathode and heater	3.0	3.4	μf
Plate to cathode and heater	3.8	3.2	μf

Mechanical:

Mounting Position. Any

Maximum Overall Length 3-5/16"

Maximum Seated Length. 2-3/4"

Maximum Diameter 1-9/32"

Bulb T-9

Base Intermediate-Shell Octal 8-Pin (JETEC No. B8-6)

or Short Intermediate-Shell Octal 8-Pin (JETEC No. B8-46)

Basing Designation for BOTTOM VIEW 8BD

Pin 1-Grid of

Unit No.2

Pin 2-Plate of

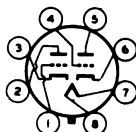
Unit No.2

Pin 3-Cathode of

Unit No.2

Pin 4-Grid of

Unit No.1



Pin 5-Plate of

Unit No.1

Pin 6-Cathode of

Unit No.1

Pin 7-Heater

Pin 8-Heater

AMPLIFIER—Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRID VOLTAGE:

Positive bias value. 0 max. volts

PLATE DISSIPATION. 1 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . . 90 max. volts

Heater positive with respect to cathode. . . 90 max. volts

Characteristics:

Plate Voltage. 250 volts

^o with close-fitting shield (JETEC No.308) connected to cathode.

←Indicates a change.

NOV. 5, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6SL7-GT



6SL7-GT HIGH-MU TWIN TRIODE

Grid Voltage	-2	volts
Amplification Factor	70	
Plate Resistance (Approx.)	44000	ohms
Transconductance	1600	μ mhos
Plate Current	2.3	ma

→ **Typical Operation as Resistance-Coupled Amplifier:**

See *RESISTANCE-COUPLED AMPLIFIER CHART No. 7*
at front of this Section

→ indicates a change.

NOV. 5, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

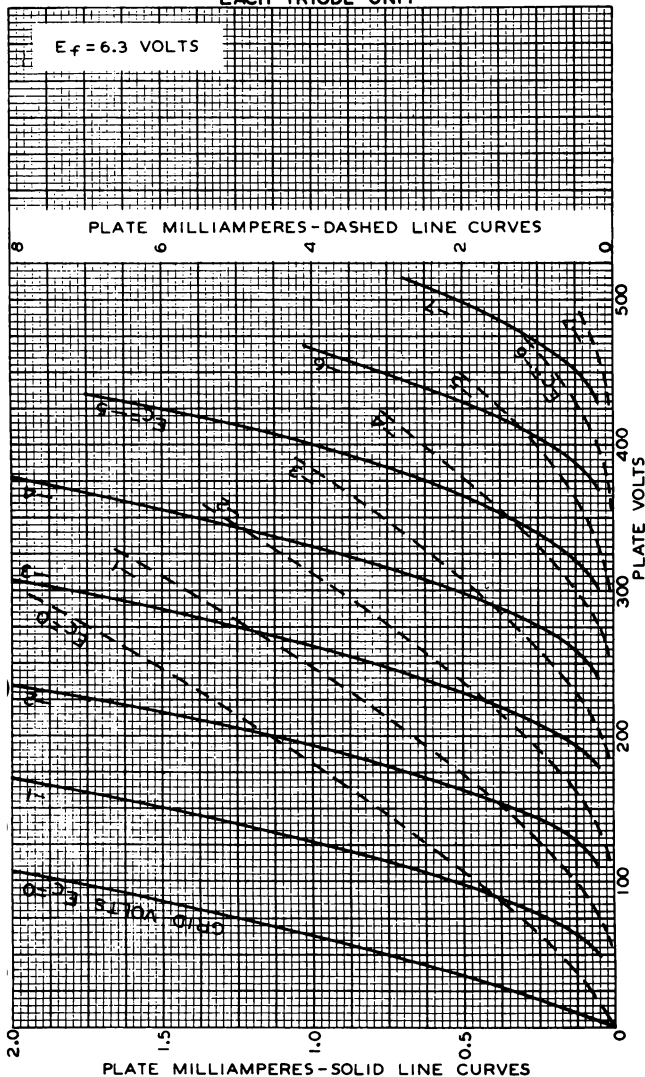
DATA



6SL7-GT

6SL7-GT

AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT



JUNE 16, 1941

TUBE DIVISION

92CM-6298

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6SN7-GT

6SN7-GT

TWIN-TRIODE AMPLIFIER

Heater	Coated Unipotential Cathodes	
Voltage	6.3	a-c or d-c volts
Current	0.6	amp.

Direct Interelectrode Capacitances (Approx.):^o

	<u>Triode Unit f_1</u>	<u>Triode Unit f_2</u>	
Grid to Plate	3.8	4.0	μf
Grid to Cathode	2.8	3.0	μf
Plate to Cathode	0.8	1.2	μf

Maximum Overall Length 3-5/16"

Maximum Seated Height 2-3/4"

Maximum Diameter 1-5/16"

Bulb T-9

Base Intermediate Shell Octal 8-Pin

Pin 1-Grid T_2 Pin 5-Plate T_1 Pin 2-Plate T_2 Pin 6-Cathode T_1 Pin 3-Cathode T_2 Pin 7-HeaterPin 4-Grid T_1 Pin 8-Heater

Mounting Position Any



BOTTOM VIEW (8BD)

For convenience, one triode unit is identified as f_1 ; the other as f_2 .

Maximum And Minimum Ratings Are Design-Center Values

AMPLIFIER-Each Unit

Plate Voltage	300 max. volts
Grid Voltage	0 min. volts
Plate Dissipation	2.5 max. watts
D-C Heater-Cathode Potential	90 max. volts
Cathode Current	20 max. ma.

Characteristics — Class A_1 Amplifier:

Plate	90	250	volts
Grid #	0	-8	volts
Amp. Fact.	20	20	
Plate Res.	6700	7700	ohms
Transcond.	3000	2600	μmhos
Plate Cur.	10	9	ma.

Typical Operation with Resistance Coupling:

Same as for Type 6F8-G in RESISTANCE-COUPLED AMPLIFIER CHAR

^o With no external shield.

* Under maximum rated conditions, the d-c resistance in the grid circuit should not exceed 1.0 megohm per unit.

The curves under Type 6J5 also apply to each unit of the 6SN7-GT.

← Indicates a change.

APRIL 1, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

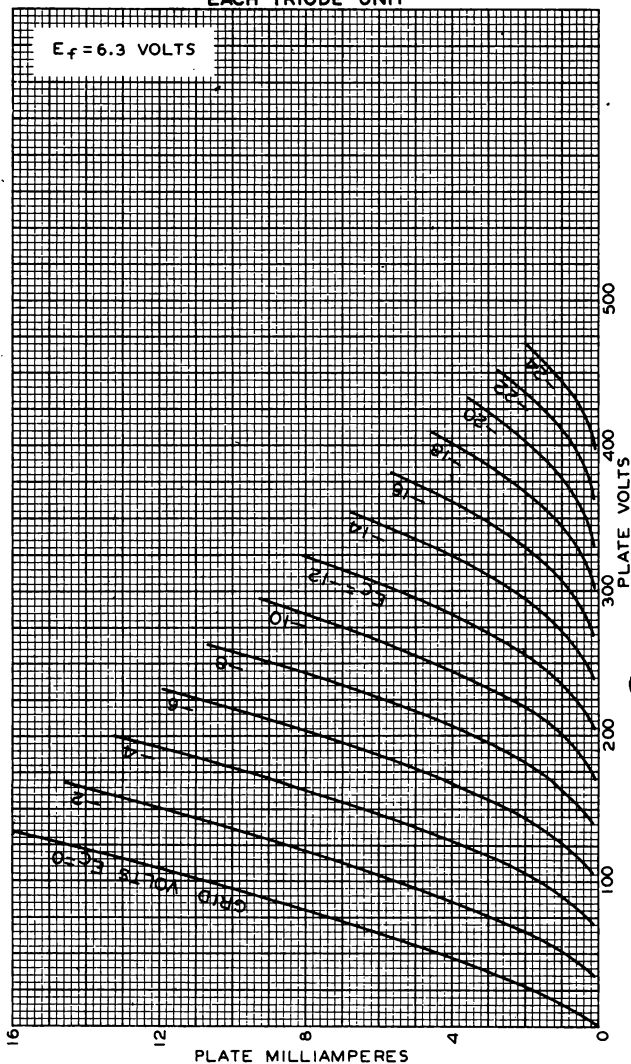
DATA

6SN7-GT



6SN7-GT

AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT



FEB. 21, 1941

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6257



6SN7-GTA

MEDIUM-MU TWIN TRIODE

6SN7-GTA

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts

Current 0.6 amp

Direct Interelectrode Capacitances (With no external shield):

	Unit No.1	Unit No.2	
Grid to plate	4	3.8	$\mu\mu\text{f}$
Grid to cathode and heater . .	2.2	2.6	$\mu\mu\text{f}$
Plate to cathode and heater . .	0.7	0.7	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage	90	250	volts
Grid Voltage	0	-8	volts
Amplification Factor	20	20	volts
Plate Resistance (Approx.) . . .	6700	7700	ohms
Transconductance	3000	2600	μmhos
Plate Current	10	9	ma
Plate Current for grid voltage of -12.5 volts	-	1.3	ma
Grid Voltage (Approx.) for plate current of 10 μamp	-7	-18	volts

Mechanical:

Mounting Position Any

Maximum Overall Length 3-5/16"

Maximum Seated Length 2-3/4"

Maximum Diameter 1-9/32"

Bulb T-9

Base Short Intermediate-Shell Octal 8-Pin
with External Barriers (JETEC No. B8-58)

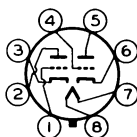
Basing Designation for BOTTOM VIEW 8BD

Pin 1 - Grid of
Unit No.2

Pin 2 - Plate of
Unit No.2

Pin 3 - Cathode of
Unit No.2

Pin 4 - Grid of
Unit No.1



Pin 5 - Plate of
Unit No.1

Pin 6 - Cathode of
Unit No.1

Pin 7 - Heater

Pin 8 - Heater

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	450 max.	volts
CATHODE CURRENT	20 max.	ma

JUNE 14, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA 1

6SN7-GTA



6SN7-GTA

MEDIUM-MU TWIN TRIODE

PLATE DISSIPATION:

Either plate	5 max.	watts
Both plates (Both units operating) . . .	7.5 max.	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias operation	1 max.	megohm
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Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART No. 29
at front of this Section

HORIZONTAL DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	450 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE [▲]	600 max.	volts

CATHODE CURRENT:

Peak	300 max.	ma
Average	20 max.	ma

PLATE DISSIPATION:

Either plate	5 max.	watts
Both plates (Both units operating) . . .	7.5 max.	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias, grid-resistor bias, or cathode-bias operation	2.2 max.	megohms
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VERTICAL DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	450 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE [#]	400 max.	volts

CATHODE CURRENT:

Peak	70 max.	ma
Average	20 max.	ma

[▲], [□], [▲], [#]: See next page.

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6SN7-GTA

6SN7-GTA

MEDIUM-MU TWIN TRIODE

PLATE DISSIPATION:

Either plate 5 max. watts
Both plates (Both units operating) . . . 7.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 200 max. volts
Heater positive with respect to cathode 200[▲] max. volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias, grid-resistor bias, or
cathode-bias operation 2.2 max. megohms

VERTICAL DEFLECTION AMPLIFIER

Values are for Each Unit

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE 450 max. volts

PEAK POSITIVE-PULSE PLATE VOLTAGE^{*}
(Absolute Maximum) . . . 1500[■] max. volts

PEAK NEGATIVE-PULSE GRID VOLTAGE 250 max. volts

CATHODE CURRENT:

Peak 70 max. ma
Average 20 max. ma

PLATE DISSIPATION:

Either plate 5 max. watts
Both plates (Both units operating) . . . 7.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 200 max. volts
Heater positive with respect to cathode 200[▲] max. volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For cathode-bias operation 2.2 max. megohms

[▲] The dc component must not exceed 100 volts.

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

[●] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

^{*} This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.

[■] under no circumstances should this absolute value be exceeded.

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA 2

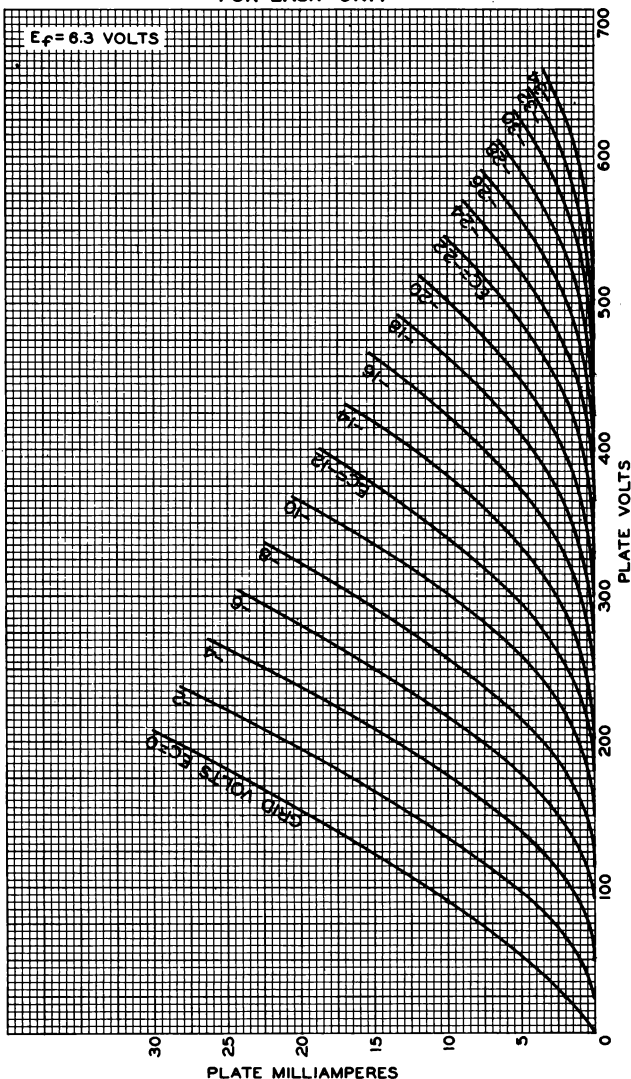
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6SN7-GTA



6SN7-GTA

AVERAGE PLATE CHARACTERISTICS
FOR EACH UNIT



APRIL. 28, 1954

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

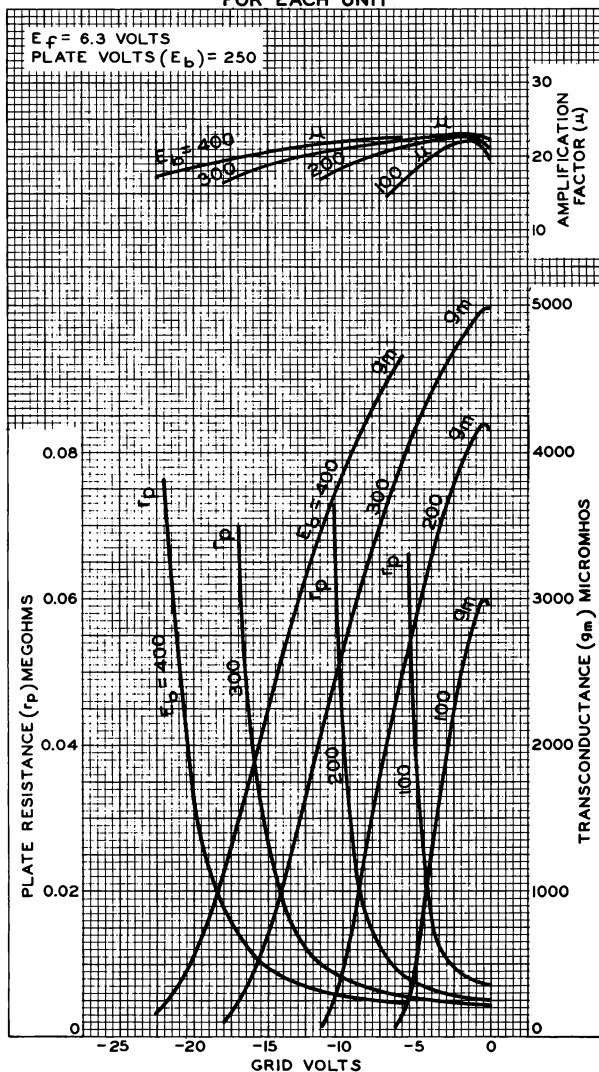
92CM-8322



6SN7-GTA

AVERAGE CHARACTERISTICS
FOR EACH UNIT

6SN7-GTA



OCT. 14, 1953

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8122



6SN7-GTB

MEDIUM-MU TWIN TRIODE

*Intended for use in equipment having
series heater-string arrangement*

6SN7-GTB

The 6SN7-GTB is the same as the 6SN7-GTA except for the following item:

Heater, for Unipotential Cathodes:

Warm-up time (Average) . 11sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.



6SQ7
6SQ7-GT/G

6SQ7, 6SQ7-GT/G

DUPLEX-DIODE HIGH-MU TRIODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Cap.	6SQ7	6SQ7-GT/G
Triode Unit:		
Grid to Plate	1.6	1.8 μf
Grid to Cathode	3.2	4.2 μf
Plate to Cathode	3.0	3.4 μf
Maximum Overall Length	2-5/8"	3-5/16"
Maximum Seated Height	2-1/16"	2-3/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell, MT-8	T-9
Base	{ Small Wafer Octal 8-Pin	{ Small Wafer Octal 8-Pin, Sleeve
Basing Designation	8Q	GT-8Q
Pin 1 { 6SQ7, Shell Base Sleeve		Pin 4 - Diode Plate #2
Pin 2 - Triode Grid		Pin 5 - Diode Plate #1
Pin 3 - Cathode		Pin 6 - Triode Plate
Pin 4 - Diode Plate #2		Pin 7 - Heater
Pin 5 - Diode Plate #1		Pin 8 - Heater
Pin 6 - Triode Plate		
Pin 7 - Heater		
Pin 8 - Heater		
Mounting Position	BOTTOM VIEW	Any
Maximum Ratings Are Design-Center Values		
TRIODE UNIT		
Plate Voltage		300 max. volts
D-C Heater-Cathode Potential		100 max. volts
Characteristics - Class A ₁ Amplifier:		
Heater	6.3	6.3 volts
Plate	100	250 volts
Grid	-1	-2 volts
Amp. Fact.	100	100
Plate Res.	110000	91000 ohms
Transcond.	900	1100 μmhos
Plate Cur.	0.4	0.9 ma.
Typical Operation—Resistance-Coupled Amplifier:		
Same as Type 75 in RESISTANCE-COUPLED AMPLIFIER CHART.		
DIODE UNITS—Two		
Consideration of these units is given under Type 85. Circuits will be similar to those shown for Type 55 with fixed bias. Diode biasing of the triode unit of the 6SQ7 or 6SQ7-GT/G is not suitable. Diode curves under Type 6B7 apply to the 6SQ7 and 6SQ7-GT/G.		
▲ with shell connected to cathode. Values are approximate. ● with no external shield. Values are approximate.		
The curve under Type 75 also applies to the 6SQ7 and the 6SQ7-GT/G.		
← Indicates a change.		

DEC. 1, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

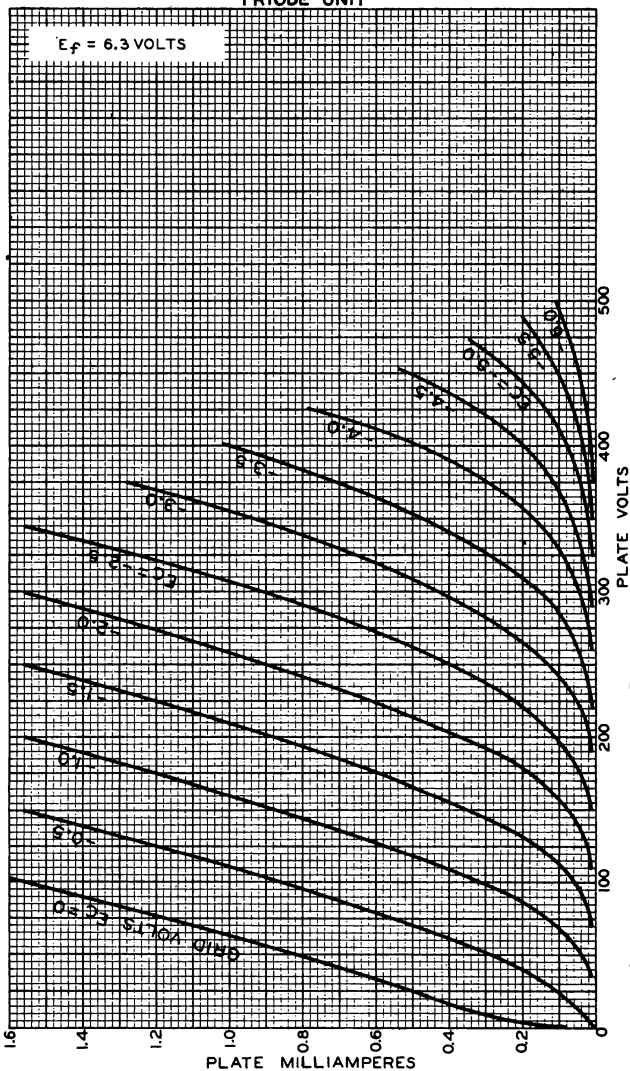
DATA

6SQ7



6SQ7

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



DEC.14, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

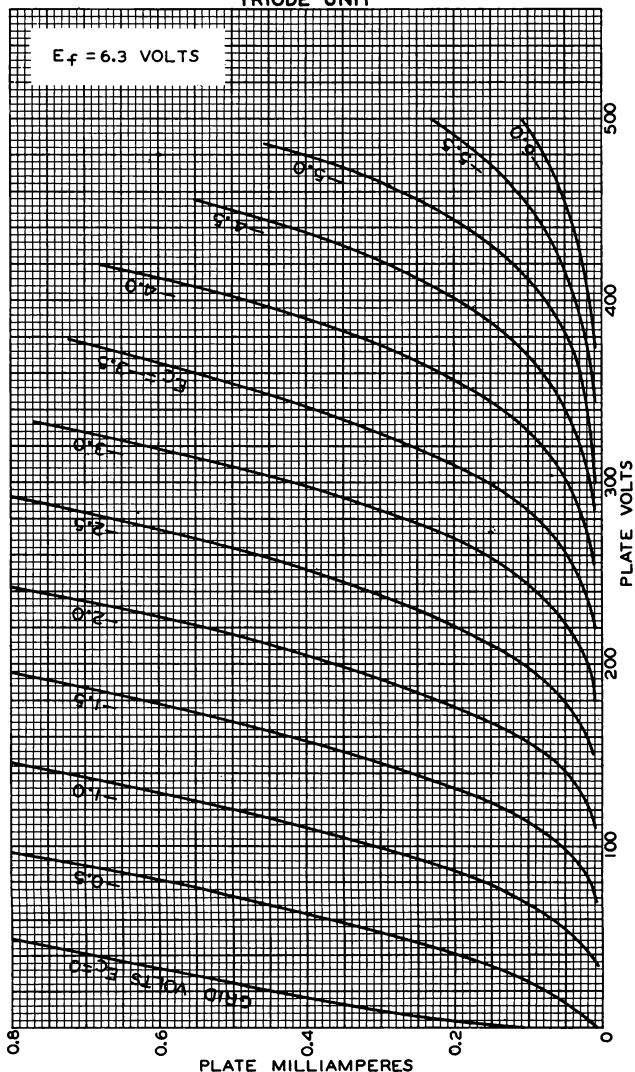
92CM-4975R2



6SQ7

6SQ7

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



AUG. 13, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6310



6SR7

**DUPLEX-DIODE TRIODE**

SINGLE-ENDED METAL TYPE

Heater [■]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances—Triode Unit: [°]		
Grid to Plate	2.4	μf
Grid to Cathode	3.6	μf
Plate to Cathode	2.8	μf
Maximum Overall Length		2-5/8"
Maximum Seated Height		2-1/16"
Maximum Diameter		1-5/16"
Bulb		Metal Shell, MT-8
Base		Small Wafer Octal 8-Pin
Pin 1—Shell		Pin 5—Diode Plate #1
Pin 2—Triode Grid		Pin 6—Triode Plate
Pin 3—Cathode		Pin 7—Heater
Pin 4—Diode Plate #2		Pin 8—Heater
Mounting Position		Any



BOTTOM VIEW (8Q)

TRIODE UNIT - Class A₁ Amplifier

Plate Voltage	250 max.	volts
Plate Dissipation	2.5 max.	watts
<i>Typical Operation with Transformer Coupling:</i>		
Plate	250	volts
Grid	-9	volts
Amp. Fact.	16	
Plate Res.	8500	ohms
Transconductance	1900	μmhos
Plate Cur.	9.5	ma.
Load Res.	10000	ohms
Power Output	300	mW

Typical Operation with Resistance Coupling:

See RESISTANCE-COUPLED AMPLIFIER CHART, Type 6R7.

DIODE UNITS—Two

For consideration of these units, see Type 85. Circuits will be similar to those shown for Type 55 with fixed bias. Diode biasing of the triode unit of the 6SR7 is not suitable. Diode curves under Type 6B7 apply to the 6SR7.

[■] In circuits where the cathode is not connected directly to the heater, the potential difference between heater and cathode should be kept as low as possible.

[°] With shell connected to cathode. values are approximate.

An additional curve applying to the 6SR7 is shown under Type 6R7.

April 15, 1940

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

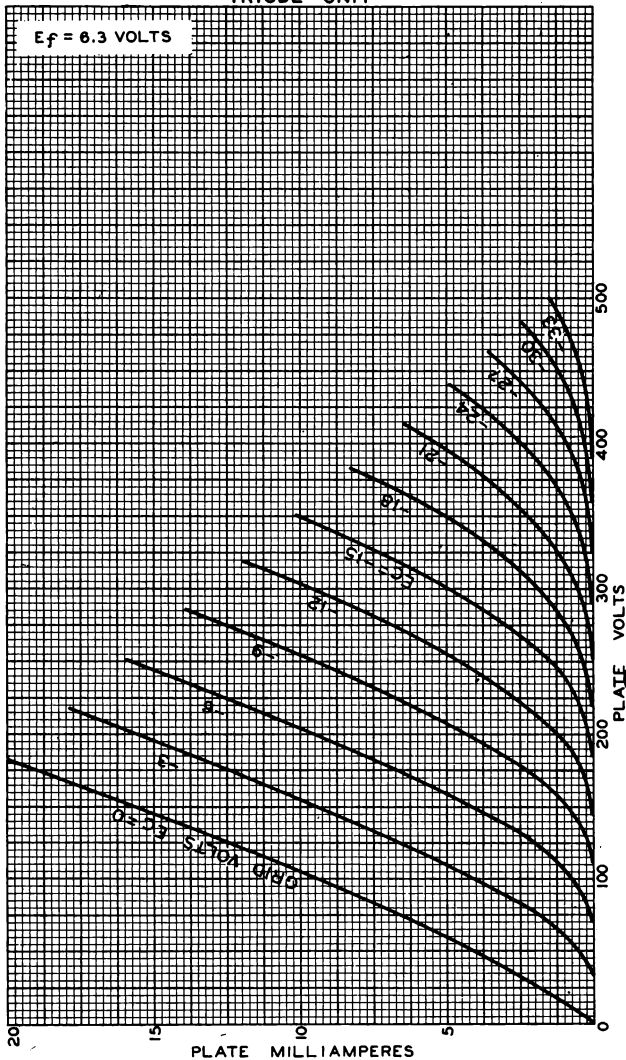
TENTATIVE DATA

6SR7



6SR7

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



JAN. 14, 1936

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6141



6SS7



6SS7

TRIPLE-GRID SUPER-CONTROL AMPLIFIER

SINGLE-ENDED METAL TYPE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Direct Interelectrode Capacitances: ^o		
Grid to Plate	0.004 max.	μuf
Input	5.5	μuf
Output	7.0	μuf
Maximum Overall Length	2-5/8"	
Maximum Seated Height	2-1/16"	
Maximum Diameter	1-5/16"	
Bulb		
Base	Metal Shell, MT-8	
Pin 1 - Shell	Small Wafer Octal, 8-Pin	
Pin 2 - Heater	Pin 5 - Cathode	
Pin 3 - Suppressor	Pin 6 - Screen	
Pin 4 - Grid	Pin 7 - Heater	
Mounting Position	Pin 8 - Plate	Any



BOTTOM VIEW (8N)

AMPLIFIER

Plate Voltage	300 max.	volts
Screen Voltage	100 max.	volts
Screen Supply Voltage	300 max.	volts
Grid Voltage	0 min.	volts
Plate Dissipation	2.25 max.	watts
Screen Dissipation	0.35 max.	watt
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>		
Plate Voltage	100	250 volts
Screen Voltage	100	100 volts
Grid Voltage	-1	-3 volts
Suppressor	Connected to cathode at socket	
Plate Res.	0.12	1.0 approx. megohm
Transcond.	1930	1850 μmhos
Grid Bias for Transcond.		
of 10 μmhos (approx.)	-35	-35 volts
Plate Cur.	12.2	9 ma.
Screen Cur.	3.1	2 ma.

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

^o With shell connected to cathode.

May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

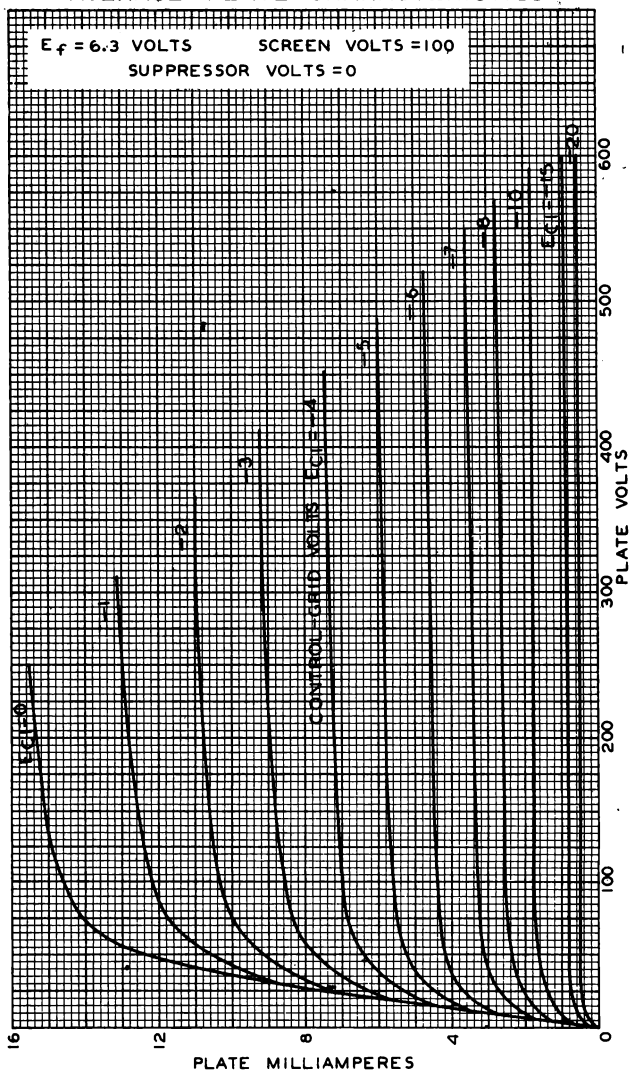
TENTATIVE DATA

6SS7



6SS7

AVERAGE PLATE CHARACTERISTICS



APR. 3, 1941

 RCA RADOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-6270



DUPLEX-DIODE TRIODE SINGLE-ENDED METAL TYPE

Heater ■	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Direct Interelectrode Capacitances (Approx.):°		
Triode Unit:		
Grid to Plate	1.5	μuf
Grid to Cathode	2.8	μuf
Plate to Cathode	3.0	μuf
Maximum Overall Length		2-5/8"
Maximum Seated Height		2-1/16"
Maximum Diameter		1-5/16"
Bulb		Metal Shell, MT-8
Base		Small Wafer Octal 8-Pin
Pin 1-Shell		Pin 5-Diode Plate #1
Pin 2-Triode Grid		Pin 6-Triode Plate
Pin 3-Cathode		Pin 7-Heater
Pin 4-Diode Plate #2		Pin 8-Heater
Mounting Position		Any
BOTTOM VIEW (8Q)		
<u>TRIODE UNIT</u>		
Plate Voltage		250 max. volts
Plate Dissipation		2.5 max. watts
Characteristics - Class A ₁ Amplifier:		
Plate	250	volts
Grid	-9	volts
Amp. Fact.	16	
Plate Res.	8500	ohms
Transcond.	1900	μmhos
Plate Cur.	9.5	ma.

DIODE UNITS - Two

For consideration of these units, see Type 85. Circuits will be similar to those shown for Type 55 with fixed bias. Diode biasing of the triode unit of the 6ST7 is not suitable. Diode curves under Type 6B7 apply to the 6ST7.

^o With shell connected to cathode.

[■] In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

Dec. 1, 1941

RCA RADOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

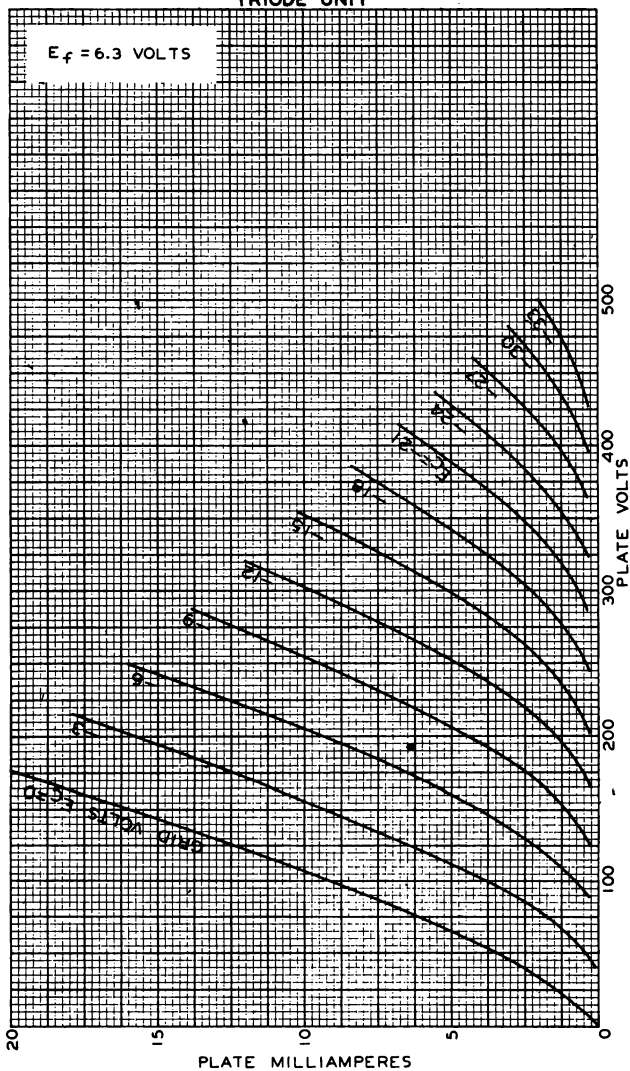
TENTATIVE DATA

6ST7



6ST7

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



DEC. 4, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6342



6S27

DUPLEX-DIODE HIGH-MU TRIODE

SINGLE-ENDED METAL TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.15 amp.

Direct Interelectrode

Capacitances-Triode Unit (Approx.):^oGrid to Plate 1.1 μ mfGrid to Cathode 2.6 μ mfPlate to Cathode 2.8 μ mf^o With shell connected to cathode.

Mechanical:

Mounting Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-1/16"

Maximum Diameter 1-5/16"

Bulb MT-8G

Base Small Wafer Octal 8-Pin

Basing Designation for BOTTOM VIEW 8Q

Pin 1-Shell

Pin 2-Triode Grid

Pin 3-Cathode

Pin 4-Diode Plate

No.2



Pin 5-Diode Plate

No.1

Pin 6-Triode Plate

Pin 7-Heater

Pin 8-Heater

TRIODE UNIT

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Characteristics - Class A₁ Amplifier:

Plate Voltage 100 250 volts

Grid Voltage -1 -3 volts

Amplification Factor 70 70

Plate Resistance (Approx.) 61000 58700 ohms

Transconductance 1150 1200 μ mhos

Plate Current 0.8 1 ma.

Typical Operation - Resistance-Coupled Amplifier:

Same as type 6Q7 in RESISTANCE-COUPLED AMPLIFIER CHART.

DIODE UNITS - Two

Consideration of these units, including typical circuits and diode curves is given at the front of this section. Diode biasing of the triode unit of the 6S27 is not suitable.

APRIL 1, 1946

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

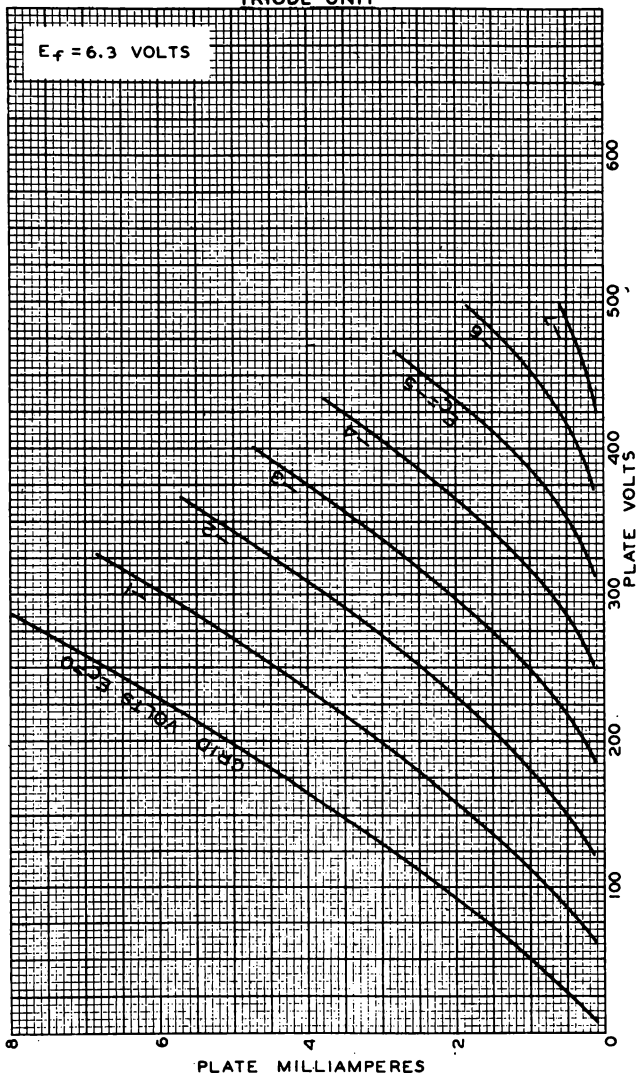
TENTATIVE DATA

6SZ7



6SZ7

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



OCT. 3, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6602



6T4

MEDIUM-MU TRIODE

7-PIN MINIATURE TYPE

For UHF TV service

6T4

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.225 amp

Direct Interelectrode Capacitances (Approx.):

	Without External Shield	With External Shield ^o	
Grid to plate.	1.7	1.7	μf
Grid to cathode and heater .	2.6	3.2	μf
Plate to cathode and heater.	0.40	2.0	μf
Heater to cathode.	3.0	3.0	μf
Grid to cathode.	2.4	2.4	μf
Plate to cathode	0.24	0.22	μf

Characteristics, Class A₁ Amplifier:

Plate-Supply Voltage 80 volts

Cathode Resistor 150 ohms

Amplification Factor 13

Transconductance 7000 μmhos

Plate Current. 18 ma

Grid Voltage (Approx.) for plate

current of 50 μamp -15 volts

Mechanical:

Mounting Position. Any

Maximum Overall Length 1-3/4"

Maximum Seated Length. 1-1/2"

Length, Base Seat to Bulb Top (Excluding tip). 1-1/8" $\pm$ 3/32"

Maximum Diameter 3/4"

Dimensional Outline. See General Section

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

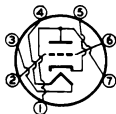
Basing Designation for BOTTOM VIEW 7DK

Pin 1 - Plate

Pin 2 - Grid

Pin 3 - Heater

Pin 4 - Heater



Pin 5 - Cathode

Pin 6 - Grid

Pin 7 - Plate

OSCILLATOR IN UHF TELEVISION RECEIVERS

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 200 max. volts

GRID CURRENT 8 max. ma

^o With external shield JETEC No.316 connected to cathode, except as noted.

• With external shield JETEC No.316 connected to ground.

6T4



6T4

MEDIUM-MU TRIODE

CATHODE CURRENT.	30	max.	ma
PLATE DISSIPATION.	3.5	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode .	50	max.	volts
Heater positive with respect to cathode .	50 [▲]	max.	volts

[▲] The dc component must not exceed 25 volts.



6T8

6T8

TRIPLE DIODE—HIGH-MU TRIODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage. 6.3 ac or dc volts

Current. 0.45 amp

Direct Interelectrode Capacitances:⁰

Triode unit:

Grid to plate. 1.8 $\mu\mu\text{f}$ Grid to cathode & internal shield
(pin 7), and heater. 1.6 $\mu\mu\text{f}$ Plate to cathode & internal shield
(pin 7), and heater. 1.1 $\mu\mu\text{f}$ Diode-No.1 plate to cathode & internal
shield (pin 7), and heater. 3.8 $\mu\mu\text{f}$ Diode-No.2 plate to cathode & internal
shield (pin 3), and heater. 4.5 $\mu\mu\text{f}$ Diode-No.3 plate to cathode & internal
shield (pin 7), and heater. 3.8 $\mu\mu\text{f}$ Diode-No.2 cathode & internal shield
(pin 3) to all other electrodes. 8.5 $\mu\mu\text{f}$ Triode grid to any diode plate. 0.035 max. $\mu\mu\text{f}$ Characteristics, Class A₁ Amplifier (Triode Unit):

Plate Voltage. 100 250 volts

Grid Voltage. -1 -3 volts

Amplification Factor. 70 70

Plate Resistance (Approx.) 54000 58000 ohms

Transconductance. 1300 1200 μmhos

Plate Current. 0.8 1 ma

Mechanical:

Mounting Position. Any

Maximum Overall Length. 2-3/16"

Maximum Seated Length. 1-15/16"

Length, Base Seat to Bulb Top (Excluding tip). 1-9/16" $\pm$ 3/32"

Maximum Diameter. 7/8"

Dimensional Outline. See General Section

Bulb. T-6-1/2

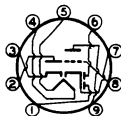
Base. Small-Button Noval 9-Pin (JETEC No.E9-1)

Basing Designation for BOTTOM VIEW. 9E

Pin 1 - Diode-No.3
PlatePin 2 - Diode-No.2
PlatePin 3 - Diode-No.2
Cathode,
Internal
Shield

Pin 4 - Heater

Pin 5 - Heater

Pin 6 - Diode-No.1
PlatePin 7 - Cathode of
Triode &
Diodes No.1
& No.3,
Internal
Shield

Pin 8 - Triode Grid

Pin 9 - Triode Plate

⁰ without external shield.

← Indicates a change.

6T8



6T8

TRIPLE DIODE—HIGH-MU TRIODE

TRIODE UNIT — AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

→ PLATE VOLTAGE.	300 max.	volts
GRID VOLTAGE:		
Positive bias value.	0 max.	volts
PLATE DISSIPATION.	1 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART No.7
at front of this Section

DIODE UNITS - Three

Maximum Ratings, Design-Center Values:

→ PLATE CURRENT (For each diode)	5 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Diode Considerations:

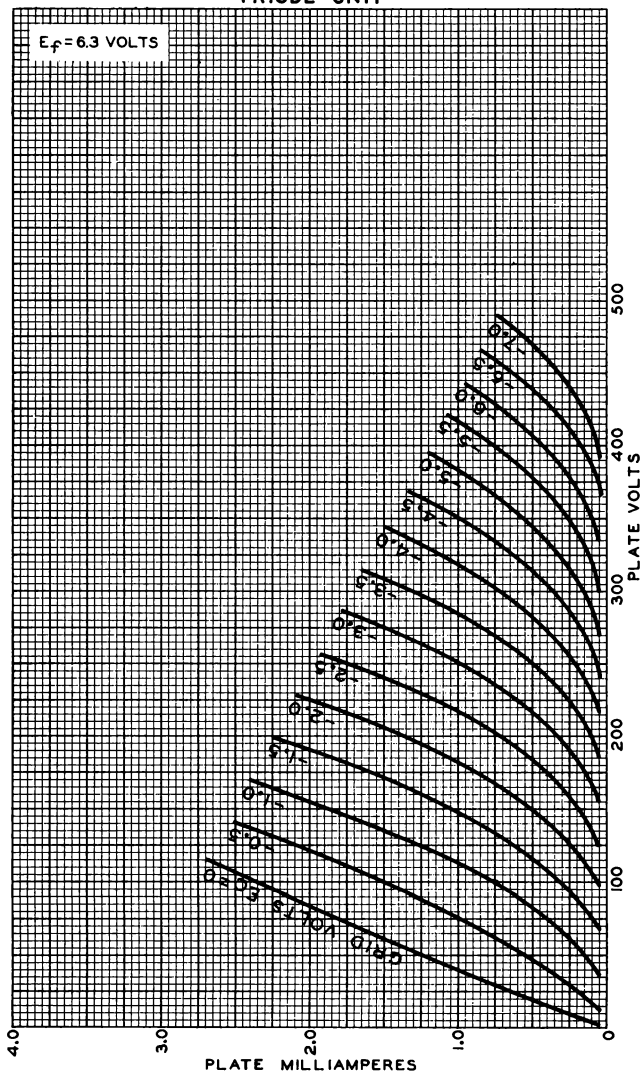
Diode No.1, diode No.3, and the triode have a common cathode, and diode No.2 has a separate cathode. Diode No.2 (pins 2 & 3) and diode No.3 (pins 1 & 7) are recommended for use in FM detector applications, while diode No.1 (pins 6 & 7) is recommended for use as an AM detector.

→ Indicates a change.



6T8

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



AUG. 19, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7063



6T8-A

6T8-A

TRIPLE DIODE-HIGH-MU TRIODE

9-PIN MINIATURE TYPE

With heater having controlled warm-up time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3		ac or dc volts
Current	$0.45 \pm 6\%$		amp
Warm-up time (Average).	11		sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield*	
Triode Unit:			
Grid to plate	1.7	1.7	$\mu\mu\text{f}$
Grid to cathode & internal shield (pin 7), and heater.	1.6	1.7	$\mu\mu\text{f}$
Plate to cathode & internal shield (pin 7), and heater.	1.2	2.4	$\mu\mu\text{f}$
Diode Units:			
Diode-No.1 plate to cathode & internal shield (pin 7), and heater.	3.8	3.8	$\mu\mu\text{f}$
Diode-No.2 plate to cathode & internal shield (pin 3), and heater.	3.8	3.8 [•]	$\mu\mu\text{f}$
Diode-No.3 plate to cathode & internal shield (pin 7), and heater.	3.4	3.6	$\mu\mu\text{f}$
Diode-No.2 cathode & internal shield (pin 3) to all other electrodes, and heater.	7.5	8.5 [■]	$\mu\mu\text{f}$
Triode grid to any diode plate	0.034 max.	0.034 max.	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier (Triode Unit):

Plate Voltage	100	250	volts
Grid Voltage.	-1	-3	volts
Amplification Factor.	70	70	
Plate Resistance (Approx.).	54000	58000	ohms
Transconductance.	1300	1200	μmhos
Plate Current	0.8	1	ma

Mechanical:

Operating Position.	Any
Maximum Overall Length.	2-3/16"

* , • , ■: See next page.

6T8-A



6T8-A

TRIPLE DIODE—HIGH-MU TRIODE

Maximum Seated Length 1-15/16"
 Length, Base Seat to Bulb Top (Excluding tip) : 1-9/16" $\pm$ 3/32"
 Diameter. 0.750" to 0.875"
 Dimensional Outline See General Section
 Bulb. T6-1/2
 Base. Small-Button Noval 9-Pin (JEDEC No.E9-1)
 Basing Designation for BOTTOM VIEW. 9E

Pin 1—Diode-No.3

Plate

Pin 2—Diode-No.2

Plate

Pin 3—Diode-No.2

Cathode,

Internal

Shield

Pin 4—Heater

Pin 5—Heater



Pin 6—Diode-No.1

Plate

Pin 7—Cathode of

Triode &

Diodes No.1

& No.3,

Internal

Shield

Pin 8—Triode Grid

Pin 9—Triode Plate

TRIODE UNIT — AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values.

PLATE VOLTAGE. 330 max. volts

GRID VOLTAGE:

Positive-bias value. 0 max. volts

PLATE DISSIPATION. 1.1 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 100 max. volts

Heater positive with respect to cathode. 100 max. volts

Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART No.7
 at front of this Section

DIODE UNITS — Three

Maximum Ratings, Design-Maximum Values:

PLATE CURRENT (For each diode) 5.5 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 100 max. volts

Heater positive with respect to cathode. 100 max. volts

Characteristics (Each Unit):

Plate Voltage. 5 volts

Plate Current. 20 ma

Diode Considerations:

Diode No.1, diode No.3, and the triode have a common cathode, and diode No.2 has a separate cathode. Diode No.2 (pins 2 & 3) and diode No.3 (pins 1 & 7) are recommended for use in FM detector applications, while diode No.1 (pins 6 & 7) is recommended for use as an AM detector.



6T8-A

6T8-A

TRIPLE DIODE—HIGH-MU TRIODE

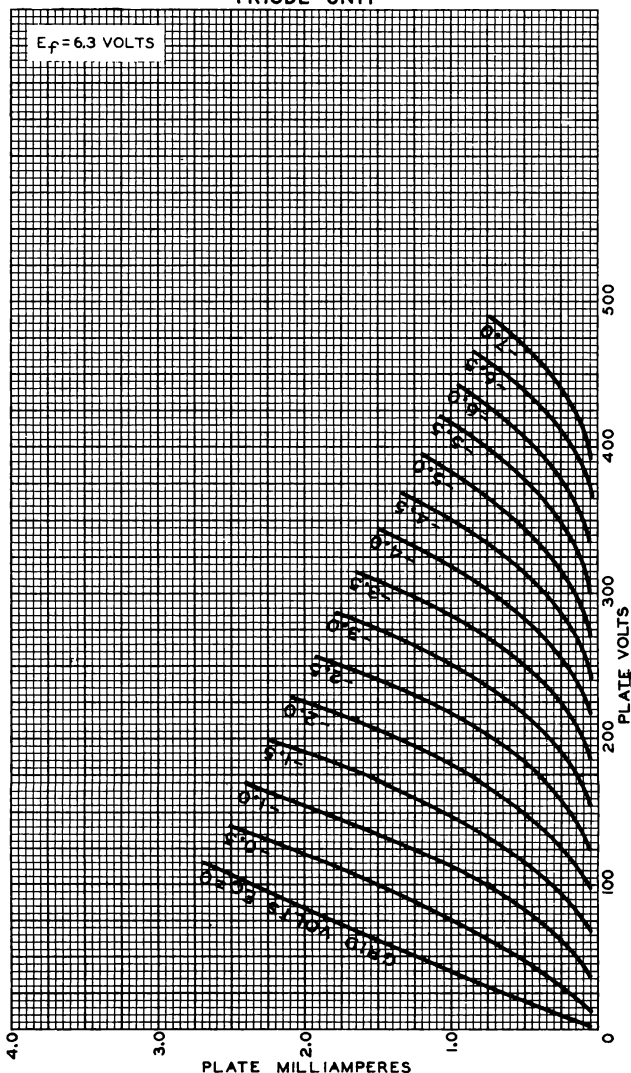
- * With external shield JEDEC No.315 connected to pin 7 except as noted.
- With external shield JEDEC No.315 connected to pin 3.
- With external shield JEDEC No.315 connected to pins 4 and 5.

6T8-A



6T8-A

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



ELECTRON TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

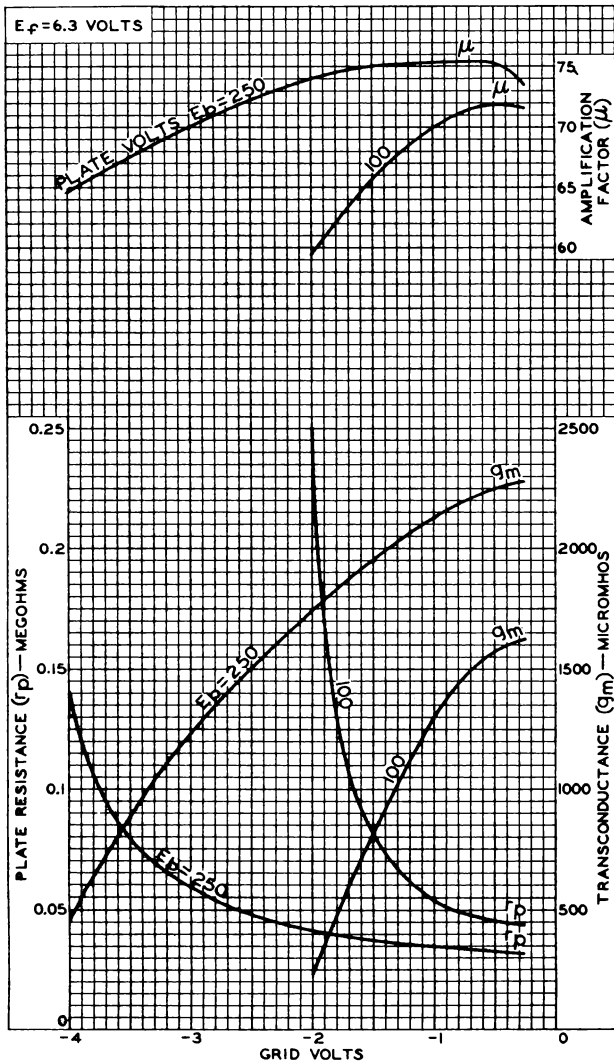
92CM-7063



6T8-A

AVERAGE CHARACTERISTICS
TRIODE UNIT

6T8-A

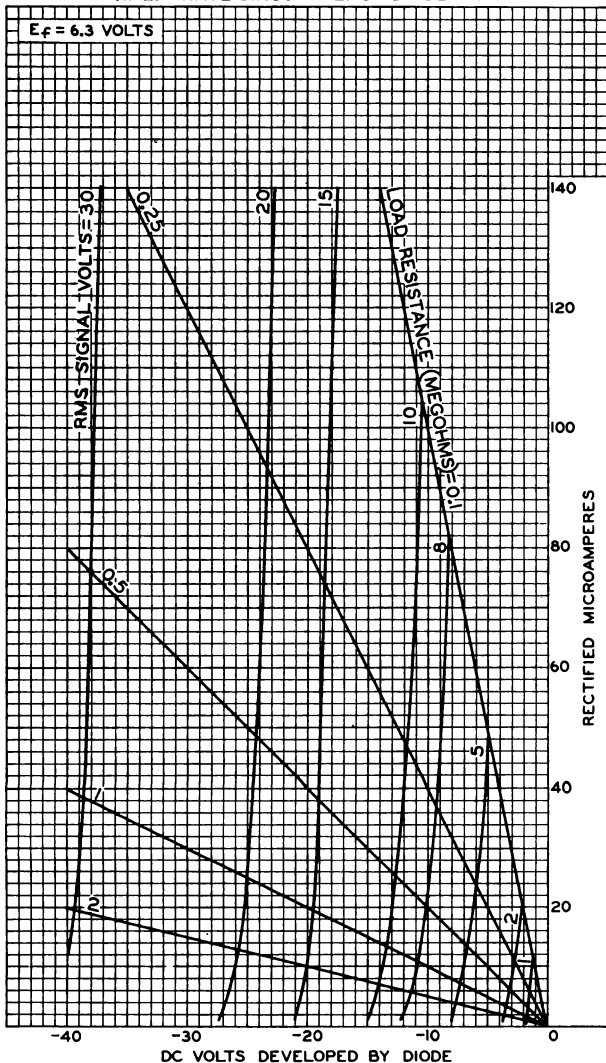


6T8-A



6T8-A

AVERAGE CHARACTERISTICS
HALF-WAVE CIRCUIT—EACH DIODE UNIT



DC VOLTS DEVELOPED BY DIODE

ELECTRON TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9610



6U5

6U5

ELECTRON-RAY TUBE

INDICATOR TYPE WITH REMOTE-CUTOFF TRIODE UNIT

GENERAL DATA**Electrical:**

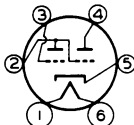
Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts
 Current 0.3 amp

Mechanical:

Mounting Position Any
 Maximum Overall Length 4-3/16"
 Seated Length 3-3/8 ± 3/16"
 Maximum Diameter 1-3/16"
 Bulb T-9
 Base Small-Shell Small 6-Pin (JETEC No. A6-7)
 Basing Designation for BOTTOM VIEW 6R

Pin 1-Heater
 Pin 2-Triode Plate,
 Ray-Control
 Electrode



Pin 3-Triode Grid
 Pin 4-Target
 Pin 5-Cathode
 Pin 6-Heater

INDICATOR SERVICE**Maximum Ratings, Design-Center Values:**

TRIODE-PLATE SUPPLY VOLTAGE	285 max.	volts	
TARGET VOLTAGE	{ 285 max.	volts	←
	{ 125 min.	volts	
TRIODE-PLATE DISSIPATION	1.0 max.	watt	
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode .	90 max.	volts	
Heater positive with respect to cathode .	90 max.	volts	

Typical Operation:

Plate Supply and Target Voltage . . .	200	250	volts
Series Triode-Plate Resistor	1	1	megohm
Target Current†			
for zero grid voltage	3	4	ma
Triode-Plate Current			
for zero grid voltage	0.19	0.24	ma
Triode-Grid Voltage (Approx.):			
For 0° shadow angle	-18.5	-22	volts
For 90° shadow angle	0	0	volts

† subject to wide variations.

*Refer to Type 6E5 for a discussion of the operation
 of the tube and also for the fundamental circuit.*

← Indicates a change.

AUG. 16, 1954

TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

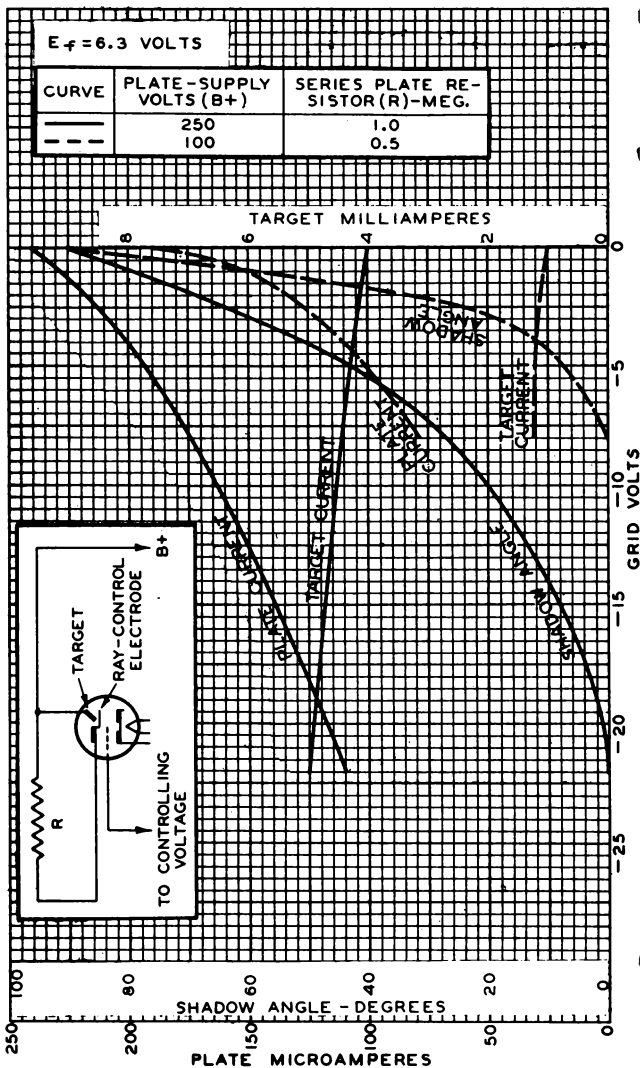
DATA

6U5



6U5

AVERAGE CONTROL CHARACTERISTICS



AUG. 9, 1954

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4626R3



TRIPLE-GRID SUPER-CONTROL AMPLIFIER

Heater	Coated Unipotential Cathode#	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:°		
Grid to Plate	0.007 max.	0.007 max. μf
Input	5	5 μf
Output	9	9 μf
Overall Length		4-5/8" to 4-7/8" ←
Seated Height		4-1/16" to 4-5/16" ←
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap		Skirted Miniature
Base		Small Shell Octal 7-Pin
Pin 1—No Connection		Pin 5—Suppressor
Pin 2—Heater		Pin 7—Heater
Pin 3—Plate		Pin 8—Cathode
Pin 4—Screen		Cap —Grid
Mounting Position	BOTTOM VIEW (G-7R)	Any



AMPLIFIER

Plate Voltage	300 max.	volts
Screen Voltage	100 max.	volts
Screen Supply Voltage	300 max.	volts
Grid Voltage	0 min.	volts
Plate Dissipation	2.25 max.	watts
Screen Dissipation	0.25 max.	watt

Typical Operation and Characteristics - Class A₁ Amplifier:

Plate	100	250	volts
Screen	100	100	volts
Grid	-3	-3	volts
Suppressor	Connected to cathode at socket		
Plate Res.	0.25	0.8 approx.	ohms
Transcond.	1500	1600	μmhos
Grid Bias for			
Transcond. of 2 μmhos	-50	-50	volts
Plate Cur.	8	8.2	ma.
Screen Cur.	2.2	2	ma.

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

The internal shield in the dome of the 6U7-G is connected to the cathode within the tube.

° With close-fitting shield connected to cathode.

The Curve under Type 6D6 also applies to the 6U7-G.

← Indicates a change.

Sept. 2, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

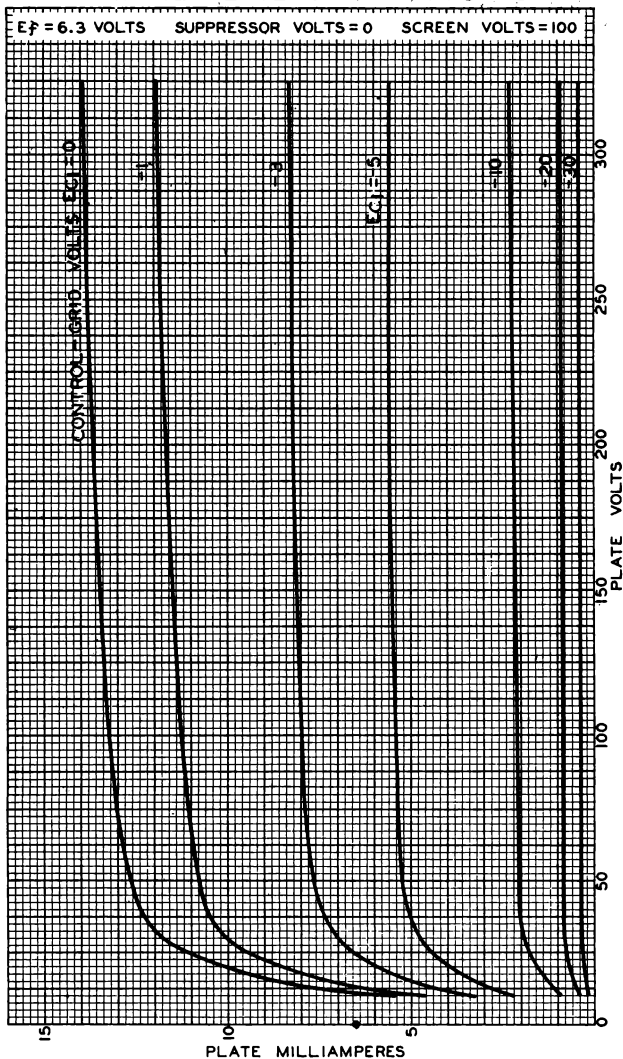
DATA

6U7-G



6U7-G

AVERAGE PLATE CHARACTERISTICS



AUG. 20, 1941

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

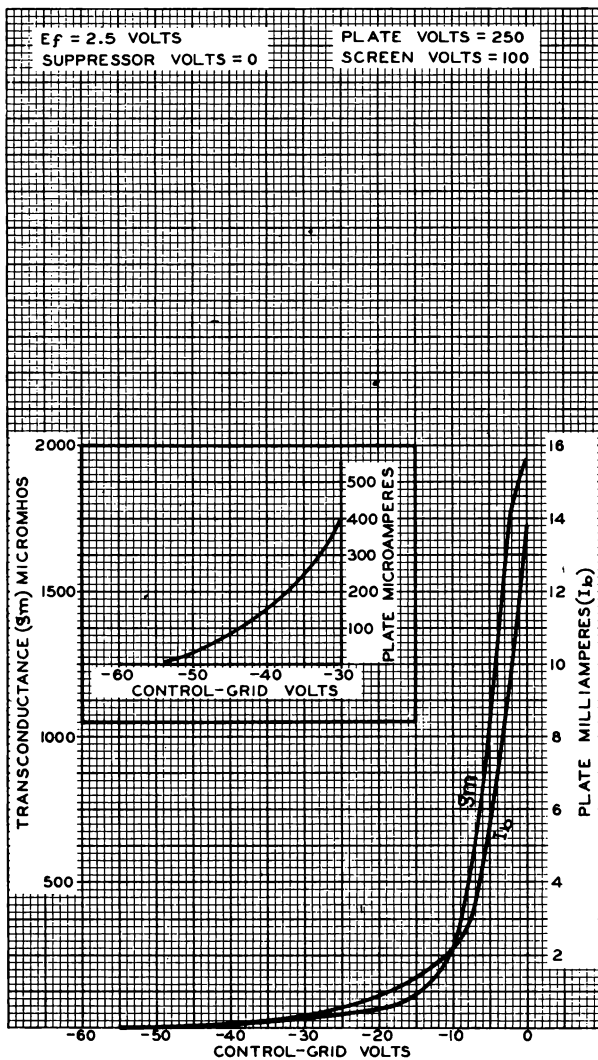
92C-6011RI



6U7-G

6U7-G

AVERAGE CHARACTERISTICS



JAN. 3, 1940

RCA RADIODIVISION
RCA MANUFACTURING COMPANY, INC.

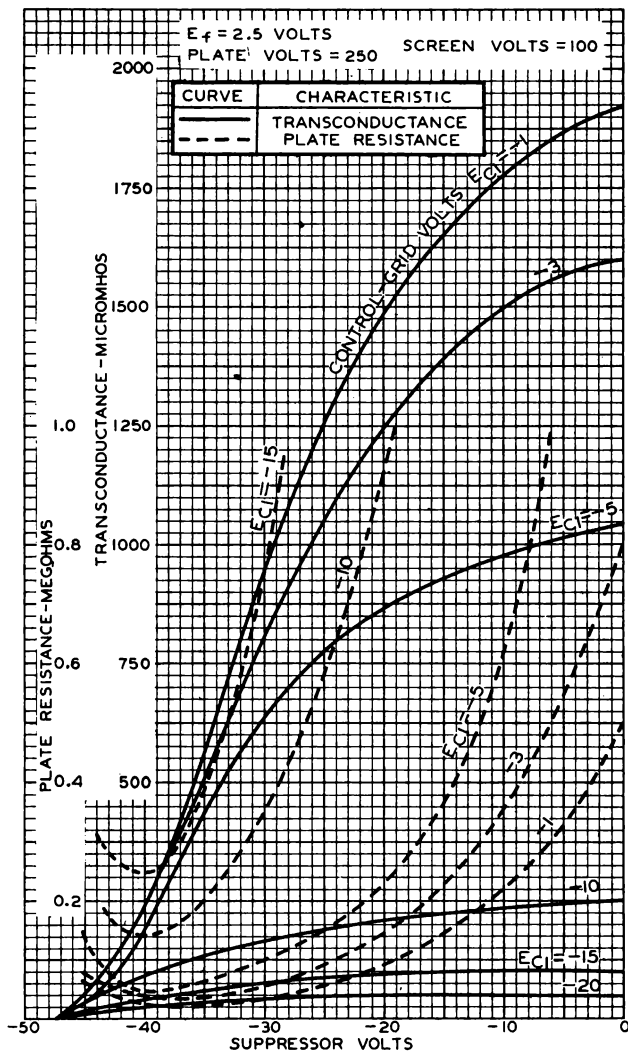
92C-6121

6U7-G



6U7-G

AVERAGE CHARACTERISTICS



JAN. 8, 1940

 RCA RADOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-6126



6U8

6U8

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts

Current 0.45 amp

Direct Interelectrode Cap.: *With Shield*[▲] *Without Shield*

Triode Unit:

Grid to Plate 1.8 1.8 μ fInput 2.5 2.5 μ fOutput 1.0 0.4 μ f

Pentode Unit:

Grid No.1 to Plate 0.006 max. 0.010 max. μ fInput 5 5 μ fOutput 3.5 2.6 μ f

Heater to Cathode

(Approx., Each Unit) 3 3 μ f

Characteristics:

	Triode Unit	Pentode Unit	
Plate Supply Voltage. . .	150	250	volts
Grid-No.2 Voltage	—	110	volts
Cathode-Bias Resistor . .	56	68	ohms
Amplification Factor . .	40	—	
Plate Resistance (Approx.)	5000	400000	ohms
Transconductance	8500	5200	μ mhos
Grid-No.1 Bias (Approx.) for Plate Cur. of 10 μ amp	-12	-10	volts
Plate Current	18	10	ma
Grid-No.2 Current	—	3.5	ma

Mechanical:

Mounting Position Any

Maximum Overall Length 2-3/16"

Maximum Seated Length 1-15/16"

Length, Base Seat to Bulb Top (Excluding tip) 1-9/16" $\pm$ 3/32"

Maximum Diameter 7/8"

Bulb T-6-1/2

Base Small-Button Noval 9-Pin (JETEC No. E9-1)

Basing Designation for BOTTOM VIEW 9AE

Pin 1—Triode Plate

Pin 2—Pentode

Grid No.1

Pin 3—Pentode

Grid No.2

Pin 4—Heater

Pin 5—Heater

Pin 6—Pentode Plate

Pin 7—Pentode

Cathode,

Pentode

Grid No.3,

Internal

Shield

Pin 8—Triode Cathode

Pin 9—Triode Grid



[▲] According to RTMA Standard ET-109A with external shield No. 315 tied to cathode of unit under test.

APRIL 1, 1953

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6U8



6U8

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

CONVERTER SERVICE

Maximum Ratings, Design-Center Values:

	Triode Unit	Pentode Unit	
PLATE VOLTAGE	300 max.	300 max.	volts
GRID-No.2 SUPPLY VOLTAGE . .	-	300 max.	volts
GRID-No.2 (SCREEN) VOLTAGE .	-	{ See Rating Curve at front of this Section	
GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Positive bias value	0 max.	0 max.	volts
PLATE DISSIPATION	2.7 max.	2.8 max.	watts
GRID-No.2 INPUT	-	0.5 max.	watt
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode . .	90 max.	90 max.	volts
Heater positive with respect to cathode . .	90 max.	90 max.	volts

APRIL 1, 1953

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

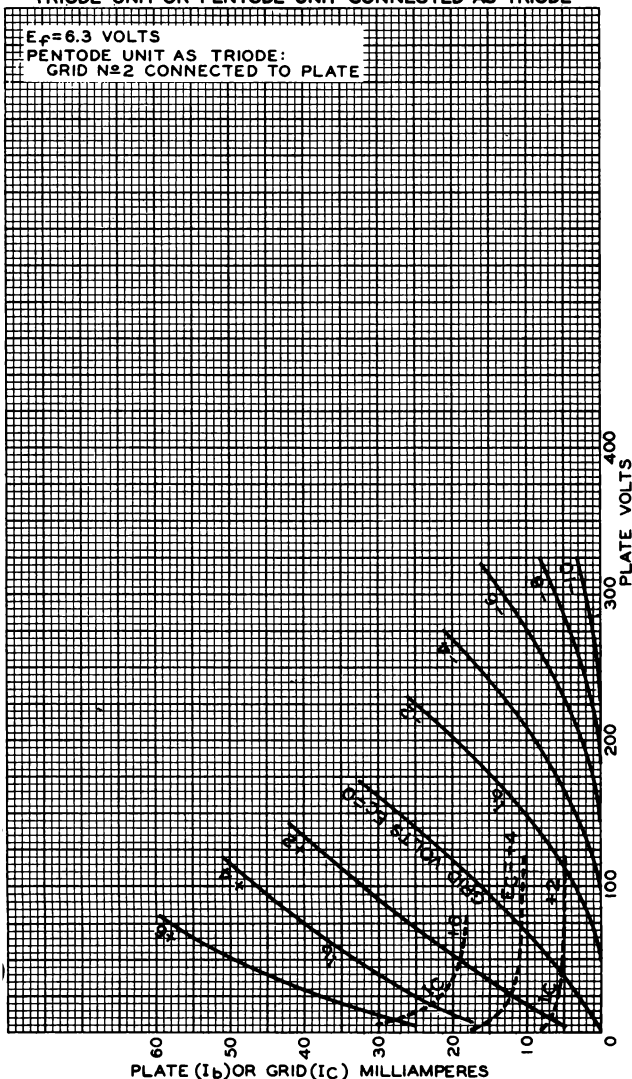
TENTATIVE DATA



6U8

6U8

AVERAGE PLATE CHARACTERISTICS
TRIODE UNIT OR PENTODE UNIT CONNECTED AS TRIODE



NOV. 12, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

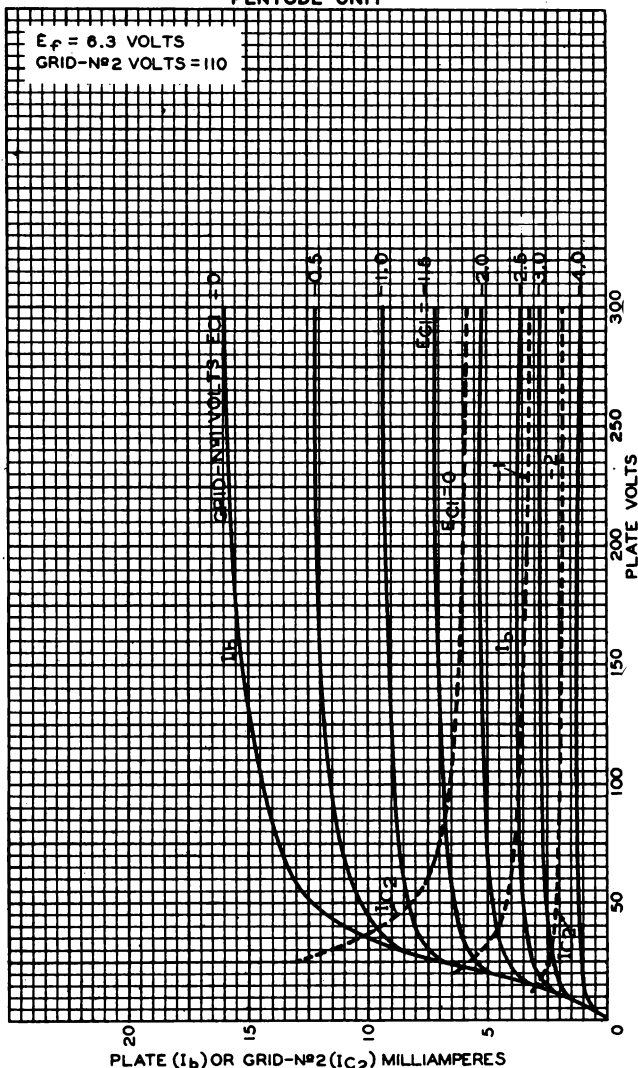
92CM-7873

6U8



6U8

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT



NOV. 11, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

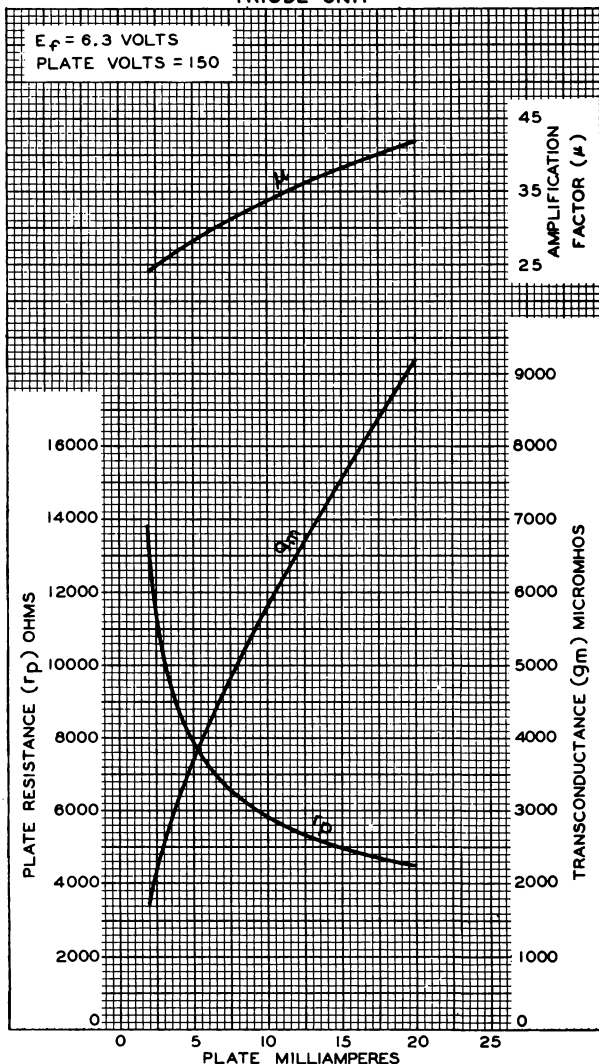
92CM-7869



6U8

6U8

AVERAGE CHARACTERISTICS TRIODE UNIT



NOV. 12, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7871



6V3-A

HALF-WAVE VACUUM RECTIFIER

9-PIN MINIATURE TYPE

For Television Damper Service

6V3-A

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 1.75 amp

Direct Interelectrode Capacitances (Approx.):^oHeater to cathode 1.5 μf Plate to cathode and heater 8 μf Cathode to plate and heater 9 μf

Mechanical:

Mounting Position Any

Maximum Overall Length 3-1/16"

Seated Length 2-21/32" $\pm$ 1/8"

Maximum Diameter 7/8"

Bulb T-6-1/2

Cap Skirted Miniature (JETEC No. C1-2 or C1-33)

Base Small-Button Noval 9-Pin (JETEC No. E9-1)

Basing Designation for BOTTOM VIEW. 9B0

Pin 1—No Con-
nectionPin 2—Plate
Pin 3—Same as
Pin 1Pin 4—Heater
Pin 5—HeaterPin 6—Same as
Pin 1Pin 7—Plate
Pin 8—Same as
Pin 1Pin 9—Plate
Cap—Cathode

DAMPER SERVICE

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system^o

PEAK INVERSE PLATE VOLTAGE

(Absolute maximum)[#] 6000[■] max. volts

PEAK PLATE CURRENT 800 max. ma

DC PLATE CURRENT 135 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode

(Absolute maximum)[#] 6750[■] max. voltsHeater positive with respect to cathode . 300[●] max. volts^o Without external shield.[■] As described in "Standards of Good Engineering Practice Television Broadcast Stations", Federal Communications Commission.[#] This rating is applicable where the duty cycle of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.[■] Under no circumstances should this absolute value be exceeded.[▲] The dc component must not exceed 750 volts.[●] The dc component must not exceed 100 volts.

MAY 1, 1955

TUBE DIVISION

TENTATIVE DATA

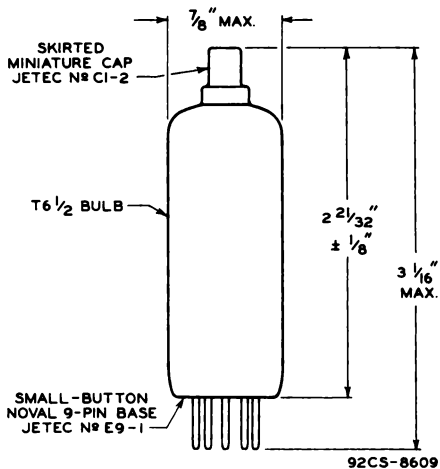
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6V3-A



6V3-A

HALF-WAVE VACUUM RECTIFIER



MAY 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-8609

6V6
6V6-GT

6V6, 6V6-GT

BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.45 amp

Direct Interelectrode Capacitances (Approx.):

6V6^o 6V6-GT^{oo}

Grid No.1 to Plate 0.3 0.7 μ f

Input 10 9 μ f

Output 11 7.5 μ f

Mechanical:

Mounting Position Any Any

Maximum Overall Length 3-1/4" 3-5/16"

Maximum Seated Length 2-11/16" 2-3/4"

Maximum Diameter 1-5/16" 1-9/32"

Bulb Metal Shell, MT-8 T-9

Base { Small-Wafer Intermed.-Shell

Octal 7-Pin Octal 7-Pin

(JETEC No. B7-22) (JETEC No. B7-7)

Basing Designation 7AC G-7AC

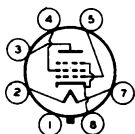
Pin 1 - { 6V6, Shell Pin 4 - Grid No.2

6V6-GT, No Pin 5 - Grid No.1

Connection Pin 7 - Heater

Pin 2 - Heater Pin 8 - Cathode,

Pin 3 - Plate Grid No.3



BOTTOM VIEW

AF POWER AMPLIFIER—Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 315 max. volts

GRID-No.2 (SCREEN) SUPPLY VOLTAGE 315 max. volts

GRID-No.2 VOLTAGE 285 max. volts

PLATE DISSIPATION 12 max. watts

GRID-No.2 INPUT 2 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

Plate Voltage 180 250 315 volts

Grid-No.2 Voltage 180 250 225 volts

Grid-No.1 Voltage -8.5 -12.5 -13 volts

Peak AF Grid-No.1 Voltage 8.5 12.5 13 volts

^o With shell connected to cathode.

^{oo} With no external shield.

←Indicates a change

JAN. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6V6
6V6-GT



6V6, 6V6-GT

BEAM POWER AMPLIFIER

Zero-Signal Plate Current . . .	29	45	34	ma
Max.-Signal Plate Current . . .	30	47	35	ma
Zero-Signal Grid-No.2 Current (Approx.)	3	4.5	2.2	ma
Max.-Signal Grid-No.2 Current (Approx.)	4	7	6	ma
→ Plate Resistance (Approx.) . .	50000	50000	80000	ohms
Transconductance	3700	4100	3750	μmhos
Load Resistance	5500	5000	8500	ohms
Total Harmonic Distortion . . .	8	8	12	per cent
Max.-Signal Power Output . . .	2	4.5	5.5	watts

AF POWER AMPLIFIER—Class AB₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	315 max.	volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE .	315 max.	volts
GRID-No.2 VOLTAGE	285 max.	volts
PLATE DISSIPATION	12 max.	watts
GRID-No.2 INPUT	2 max.	watts
→ PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode . .	90 max.	volts
Heater positive with respect to cathode . .	90 max.	volts

Typical Operation:

Values are for 2 tubes

Plate Voltage	250	285	volts
Grid-No.2 Voltage	250	285	volts
Grid-No.1 Voltage [▲]	-15	-19	volts
Peak AF Grid-No.1-to-			
Grid-No.1 Voltage	30	38	volts
Zero-Signal Plate Current	70	70	ma
Max.-Signal Plate Current	79	92	ma
Zero-Sig. Grid-No.2 Cur. (Approx.)	5	4	ma
Max.-Sig. Grid-No.2 Cur. (Approx.)	13	13.5	ma
→ Plate Resistance (Approx.)	60000	70000	ohms
Transconductance	3750	3600	μmhos
Effective Load Resistance	10000	8000	ohms
Total Harmonic Distortion	5	3.5	per cent
Max.-Signal Power Output	10	14	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance: [▲]

For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

[▲] The type of input coupling used should not introduce too much resistance in the grid-No.1 circuit. Transformer- or impedance-coupling devices are recommended.

→ Indicates a change

JAN. 1, 1953

TUBE DEPARTMENT

DATA

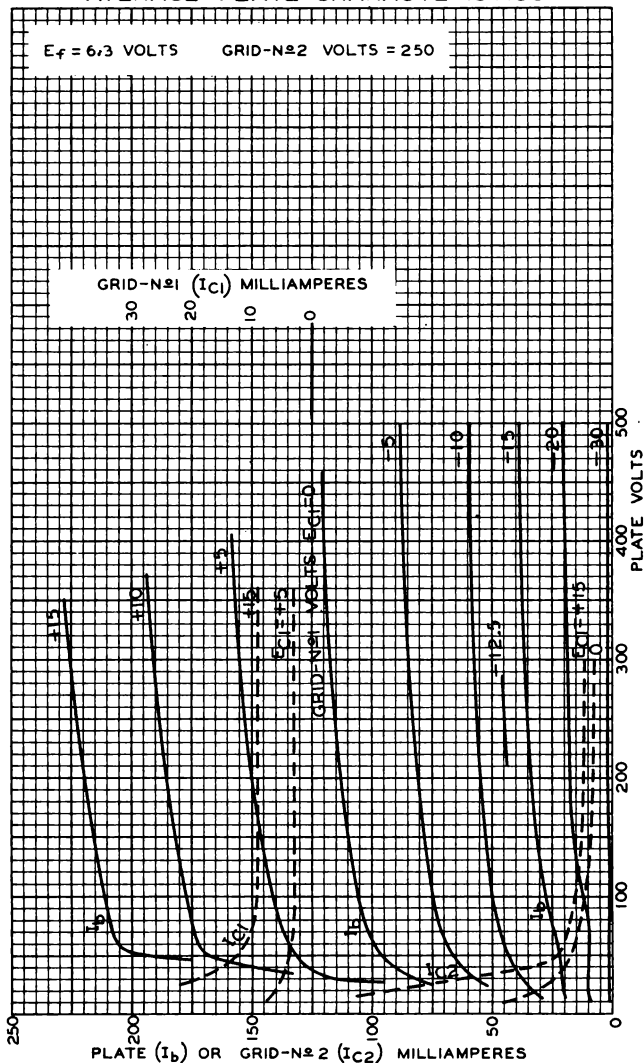
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6V6

6V6

AVERAGE PLATE CHARACTERISTICS



DEC. 18, 1952

TUBE DEPARTMENT

92CM-4807R2

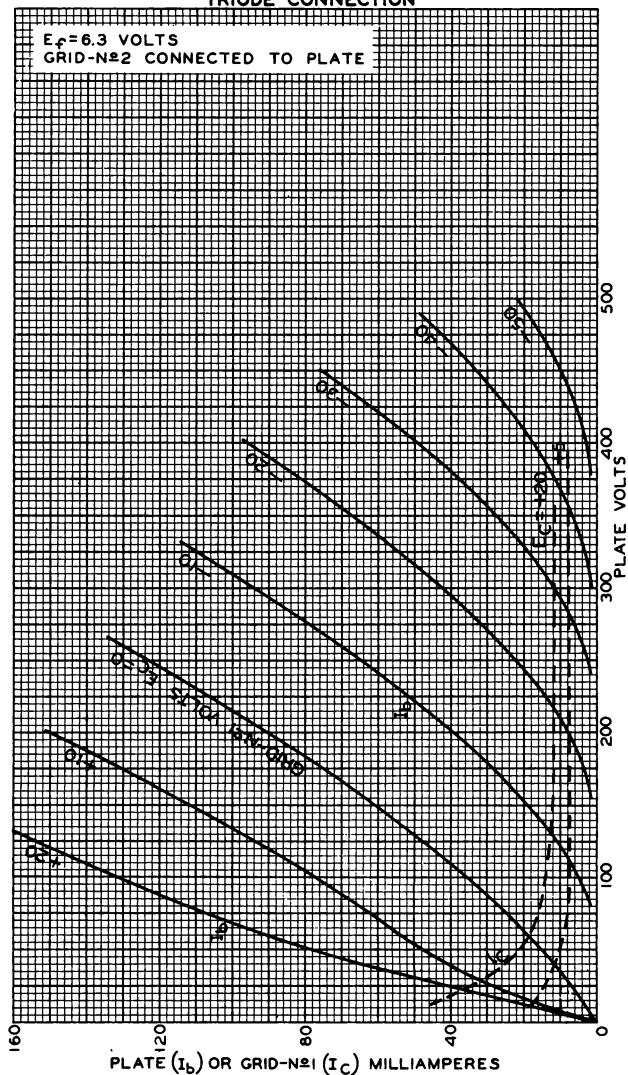
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6V6



6V6

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



DEC. 18, 1952

TUBE DEPARTMENT

92CM-6333RI

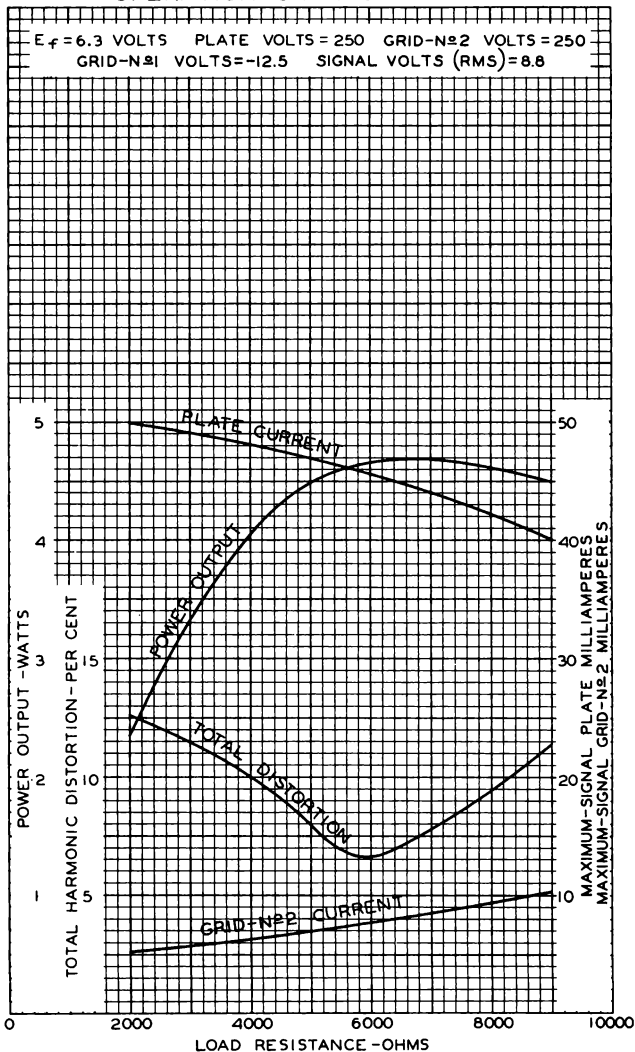
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6V6

6V6

OPERATION CHARACTERISTICS



DEC. 18, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6339R1



6W4-GT

6W4-GT

HALF-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac volts

Current. 1.2 amp

Direct Interelectrode Capacitances (Approx.):^oHeater to Cathode. 7.0 μf Plate to Heater
and Cathode. 5.3 μf

Mechanical:

Mounting Position. Any

Maximum Overall Length. 3-5/16"

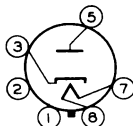
Maximum Seated Length. 2-3/4"

Maximum Diameter. 1-9/32"

Bulb T-9

Base Intermediate-Shell Octal 6-Pin

Basing Designation for BOTTOM VIEW. 4CG

Pin 1-No
ConnectionPin 2-No
Connection

Pin 3-Cathode

Pin 5-Plate

Pin 7-Heater

Pin 8-Heater

DAMPER SERVICE

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE. 3500* max. volts

PEAK PLATE CURRENT. 600 max. ma

DC PLATE CURRENT. 125 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 2100** max. volts

Heater positive with respect to cathode. 100 max. volts

RECTIFIER SERVICE

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE. 1250 max. volts

PEAK PLATE CURRENT. 600 max. ma

HOT-SWITCHING TRANSIENT PLATE CURRENT

For duration of 0.2 second maximum. 3.5 max. amp

DC OUTPUT CURRENT. 125 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 450 max. volts

Heater positive with respect to cathode. 100 max. volts

^o With no external shield.

This rating is applicable where the duty cycle of the voltage pulse does not exceed 15 percent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15% of one horizontal scanning cycle is 10 microseconds.

** The dc component must not exceed more than 450 volts.

← Indicates a change.

MARCH 1, 1951

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6W4-GT

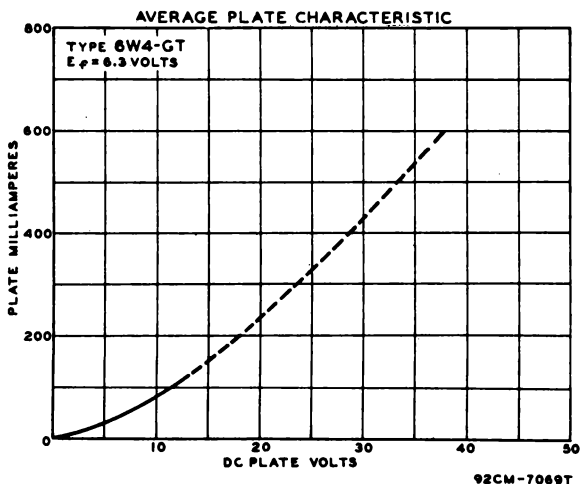


6W4-GT

HALF-WAVE VACUUM RECTIFIER

Typical Operation:

	Half-Wave Rectifier (One Tube)	Full-Wave Rectifier (Two Tubes)	
AC Plate-Supply Voltage (RMS) . .	350	—	volts
AC Plate-to-Plate Supply Voltage (RMS)	—	700	volts
Filter-Input Capacitor	20	20	μ f
Minimum Total Effective Plate- Supply Impedance Per Plate .	145	145	ohms
DC Output Current	125	250	ma
DC Output Voltage at Input to Filter (Approx.):			
At half-load cur. of { 62.5 ma.	390	—	volts
{ 125 ma.	—	395	volts
At full-load cur. of { 125 ma.	335	—	volts
{ 250 ma.	—	350	volts
Voltage Regulation (Approx.):			
Half-load to full-load current	55	45	volts



MARCH 1, 1951

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

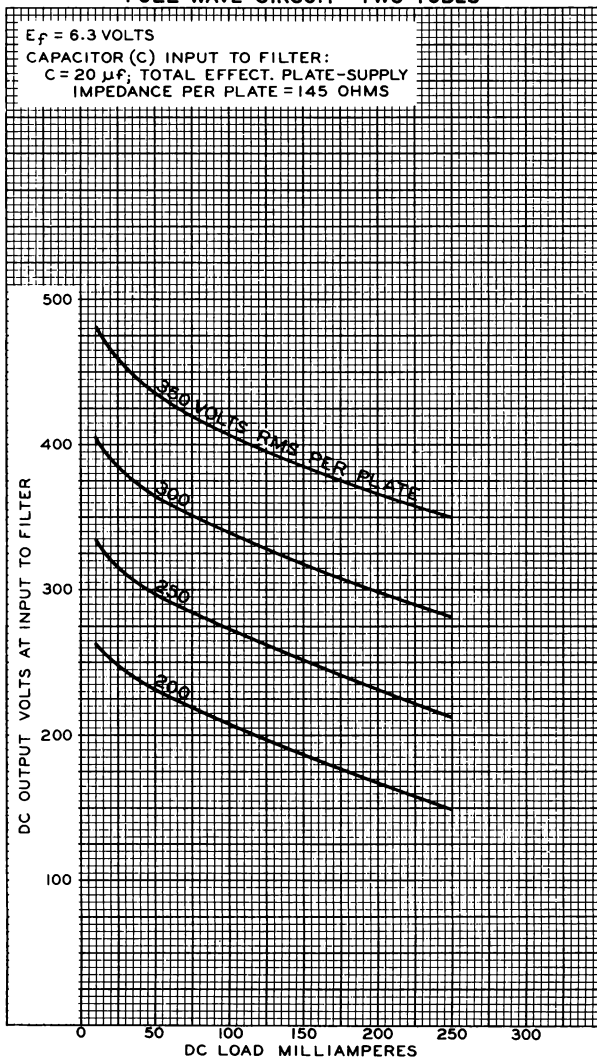


6W4-GT

6W4-GT

OPERATION CHARACTERISTICS

FULL-WAVE CIRCUIT—TWO TUBES



OCT. 13, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7091



6W6-GT

6W6-GT

BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 1.2 amp

Direct Interelectrode Capacitances (Approx.):

Grid No.1 to Plate 0.5 max. $\mu\mu\text{f}$ Input 15 $\mu\mu\text{f}$ Output 9 $\mu\mu\text{f}$

Characteristics as Beam Power Amplifier:

See AMPLIFIER—Class A₁ below:

Characteristics as Triode-Connected Amplifier:

(Grid No.2 connected to plate)

Plate Voltage 225 volts

Grid-No.1 Voltage -30 volts

Amplification Factor 6.2

Plate Resistance 1600 ohms

Transconductance 3800 μmhos

Plate Current 22 ma

Grid-No.1 Voltage (Approx.) for
plate current of 0.5 ma -42 volts ←

Mechanical:

Mounting Position Any

Maximum Overall Length 3-5/16"

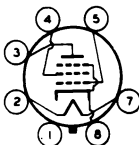
Maximum Seated Length 2-3/4"

Maximum Diameter 1-9/32"

Bulb T-9

Base. Intermediate-Shell Octal 6-Pin (JETEC No. B6-8) ←
or Intermediate-Shell Octal 7-Pin (JETEC No. B7-7)
or Short Intermediate-Shell Octal 6-Pin with Ex-
ternal Barriers (JETEC No. B6-60)
or Short Intermediate-Shell Octal 7-Pin with Ex-
ternal Barriers (JETEC No. B7-59)

Basing Designation for BOTTOM VIEW G-7AC

Pin 1—No
Connection
Pin 2—Heater
Pin 3—Plate
Pin 4—Grid No.2Pin 5—Grid No.1
Pin 7—Heater
Pin 8—Cathode,
Grid No.3AMPLIFIER—Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 150 max. volts

PLATE DISSIPATION 10 max. watts

GRID-No.2 INPUT 1.25 max. watts

← Indicates a change.

OCT. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6W6-GT



6W6-GT

BEAM POWER AMPLIFIER

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200 ^a max.	volts

Typical Operation and Characteristics:

Plate Supply Voltage	110	200	volts
Grid-No.2 Voltage	110	125	volts
Grid-No.1 (Control-Grid) Voltage . .	-7.5	-	volts
Cathode-Bias Resistor	-	180	ohms
Peak AF Grid-No.1 Voltage	7.5	8.5	volts
Zero-Signal Plate Current	49	46	ma
Max.-Signal Plate Current	50	47	ma
Zero-Signal Grid-No.2 Current	4	2.2	ma
Max.-Signal Grid-No.2 Current	10	8.5	ma
Plate Resistance (Approx.)	13000	28000	ohms
Transconductance	8000	8000	μ mhos
Load Resistance	2000	4000	ohms
Total Harmonic Distortion (Approx.) .	10	10	%
Max.-Signal Power Output	2.1	3.8	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

VERTICAL DEFLECTION AMPLIFIER

Triode Connected--Grid No.2 Connected to Plate

Maximum Ratings, Design-Center Values Except As Noted:

For operation in a 525-line, 30-frame system^o

DC PLATE VOLTAGE	300 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^o	1200 ^a max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 (CONTROL-GRID) VOLTAGE	-250 max.	volts
CATHODE CURRENT:		
Peak	140 max.	ma
DC	40 max.	ma
PLATE DISSIPATION	7.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200 ^a max.	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For cathode-bias operation	2.2 max.	megohms
--------------------------------------	----------	---------

^a The dc component must not exceed 100 volts.^o As described in "Standards of Good Engineering Practice for Television Broadcast Stations", Federal Communications Commission.^o The duration of the voltage pulse must not exceed 15 per cent of one scanning cycle. In a 525-line, 30-frame system, 15 per cent of one scanning cycle is 2.5 milliseconds.^o under no circumstances should this absolute value be exceeded.

OCT. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

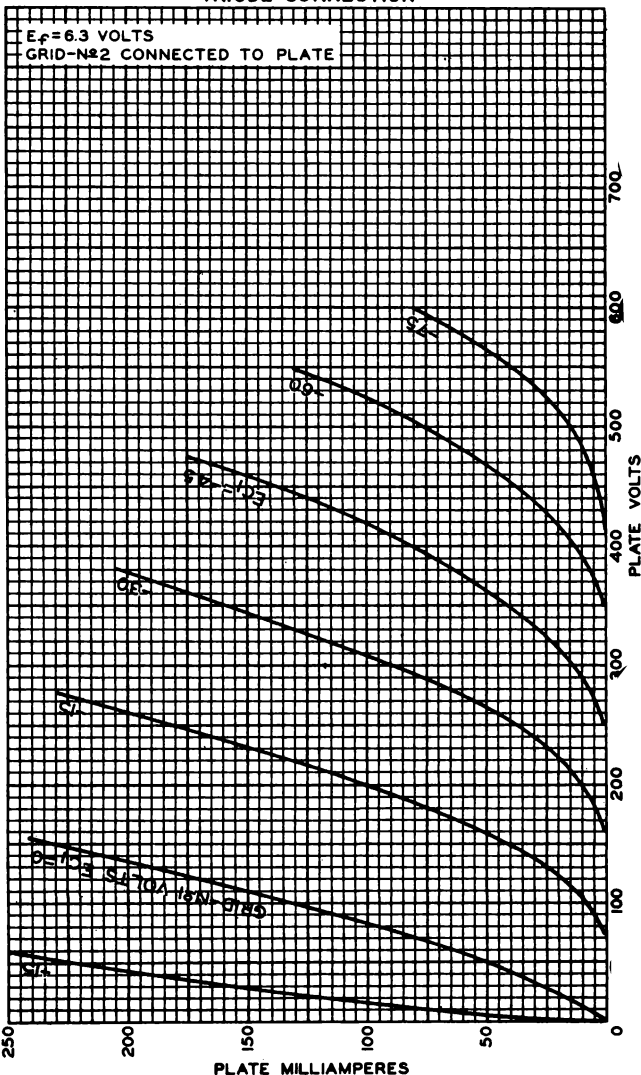
TENTATIVE DATA

6W6-GT



6W6-GT

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



MAR. 11, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7943



6W7-G

6W7-G
★**TRIPLE-GRID DETECTOR AMPLIFIER**

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	0.007 max.	μf
Input	5	μf
Output	8.5	μf
Overall Length	4-7/32" to 4-15/32"	
Seated Height	3-21/32" to 3-29/32"	
Maximum Diameter	1-9/16"	
Bulb	ST-12	
Cap	Skirted Miniature	
Base	Small Shell Octal 7-Pin	
Pin 1 - No Connection	Pin 5 - Suppressor	
Pin 2 - Heater	Pin 7 - Heater	
Pin 3 - Plate	Pin 8 - Cathode	
Pin 4 - Screen	Cap - Grid	
Mounting Position		Any



BOTTOM VIEW (G-7R)

AMPLIFIER

Plate Voltage	300 max. volts
Screen Voltage	100 max. volts
Screen Supply Voltage	300 max. volts
Grid Voltage	0 min. volts
Plate Dissipation	0.5 max. watt
Screen Dissipation	0.1 max. watt
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>	
Plate	250 volts
Screen	100 volts
Grid	-3 volts
Suppressor	Connected to cathode at socket
Plate Res. (approx.)	1.5 megohms
Transcond.	1225 μmhos
Grid Bias (approx.) for cathode-current cut-off	-7 volts
Plate Cur.	2 ma.
Screen Cur.	0.5 ma.

Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- With close-fitting shield connected to cathode.

Curves under types 6J7 and 57 apply to the 6W7-G within the limitations of the maximum ratings.

← Indicates a change.

Dec. 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



6X4

FULL-WAVE VACUUM RECTIFIER

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.6 amp

Mechanical:

Mounting Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-3/8"

Length from Base Seat to Bulb Top
(Excluding tip) 2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

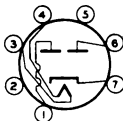
Basing Designation for BOTTOM VIEW 7CF

Pin 1-Plate No.2

Pin 2-No Connection

Pin 3-Heater

Pin 4-Heater



Pin 5-No

Connection

Pin 6-Plate No.1

Pin 7-Cathode

RECTIFIER SERVICE

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE 1250 max. volts

PEAK PLATE CURRENT PER PLATE 210 max. ma

AC PLATE SUPPLY VOLTAGE (RMS) PER PLATE See Rating Chart I

DC OUTPUT CURRENT PER PLATE See Rating Chart I

HOT-SWITCHING CURRENT:

If hot-switching is regularly required in operation, the use of choke-input circuits is recommended. Such circuits limit the hot-switching current to a value no higher than that of the peak plate current. When capacitor-input circuits are used, a maximum peak current value per plate of 1 ampere during the initial cycles of the hot-switching transient should not be exceeded.

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 450 max. volts

Heater positive with respect to cathode 450 max. volts

Typical Operation as Full-Wave Rectifier

with Capacitor-Input to Filter:

AC Plate-to-Plate Supply Voltage (RMS) 650 volts

Filter Input Capacitor 10 μ f

Effective Plate-Supply Impedance per Plate 520 ohms

* Higher values of capacitance than indicated may be used but the effective plate-supply impedance should be increased to prevent exceeding the maximum rating for peak plate current.

← Indicates a change

OCT. 1, 1953

TUBE DEPARTMENT

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6X4



6X4

FULL-WAVE VACUUM RECTIFIER

DC Output Voltage at Input to

Filter (Approx.):

At half-load current of 35 ma. 360 volts

At full-load current of 70 ma. 300 volts

Voltage Regulation (Approx.):

Half-load to full-load current 60 volts

→ Typical Operation as Full-Wave Rectifier

with Choke-Input to Filter:

AC Plate-to-Plate Supply Voltage (RMS) . . . 900 volts

Minimum Filter Input Choke 10 henries

DC Output Voltage at Input to

Filter (Approx.):

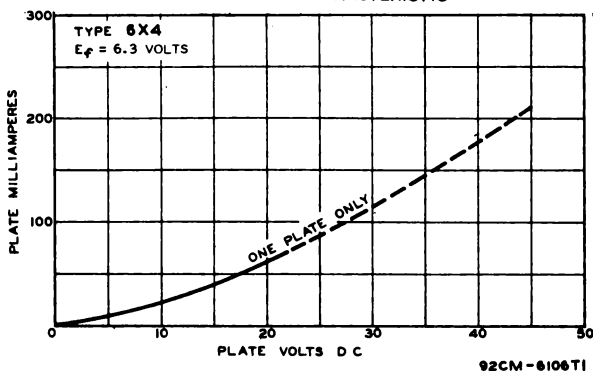
At half-load current of 35 ma. 385 volts

At full-load current of 70 ma. 370 volts

Voltage Regulation (Approx.):

Half-load to full-load current 15 volts

AVERAGE PLATE CHARACTERISTIC



RATING CHARTS AND OPERATION CHARACTERISTICS

Rating Chart I represents graphically the relationships between maximum ac voltage input and maximum dc output current derived from the fundamental ratings for conditions of capacitor-input and choke-input filters. This graphical presentation gives the equipment designer considerable latitude in choice of operating conditions.

Rating Chart II presents graphically the relationship between maximum rectification efficiency and maximum dc output current per plate for conditions of capacitor input to filter.

→ indicates a change

OCT. 2, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1



6X4

6X4

FULL-WAVE VACUUM RECTIFIER

Rating Chart III represents graphically the relationships between minimum plate-supply resistance per plate and maximum ac plate-supply voltage per plate under no-load conditions for conditions of capacitor input to filter when occasional hot-switching is employed.

The *Operation Characteristics for Full-Wave Circuit with Capacitor-Input Filter* show not only the typical operating curves for such a circuit, but also show by means of boundary-lines "DEA" the limiting current and voltage relationships presented on *Rating Chart I*.

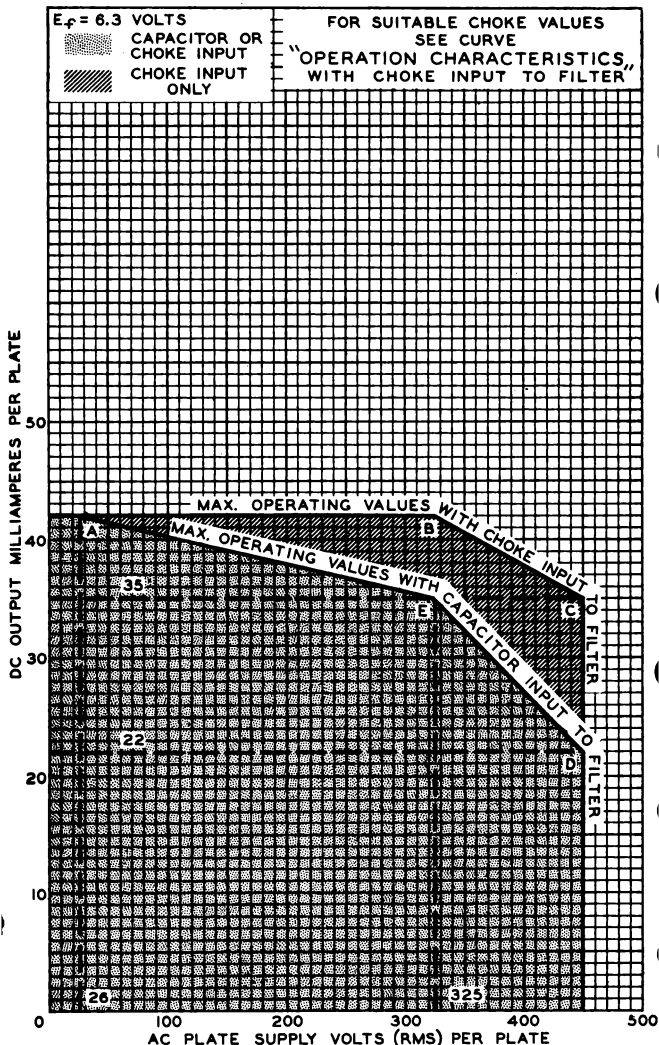
The *Operation Characteristics for Full-Wave Circuit with Choke-Input Filter* show the typical operating curves for such a circuit. They not only show by means of boundary line "ABC" the limiting current and voltage relationships presented on *Rating Chart I*, but also give information as to the effect on regulation of various sizes of chokes. The solid-line curves show the dc voltage outputs which would be obtained if the filter chokes had infinite inductance. The long-dash lines radiating from the zero position are boundary lines for various sizes of chokes as indicated. The intersection of one of these lines with a solid-line curve indicates the point on the curve at which the choke no longer behaves as though it had infinite inductance. To the left of the choke boundary line, the regulation curves depart from the solid-line curves as shown by the representative short-dash regulation curves.

6X4



6X4

RATING CHART I



JUNE 29, 1953

TUBE DEPARTMENT

92CM-8025

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

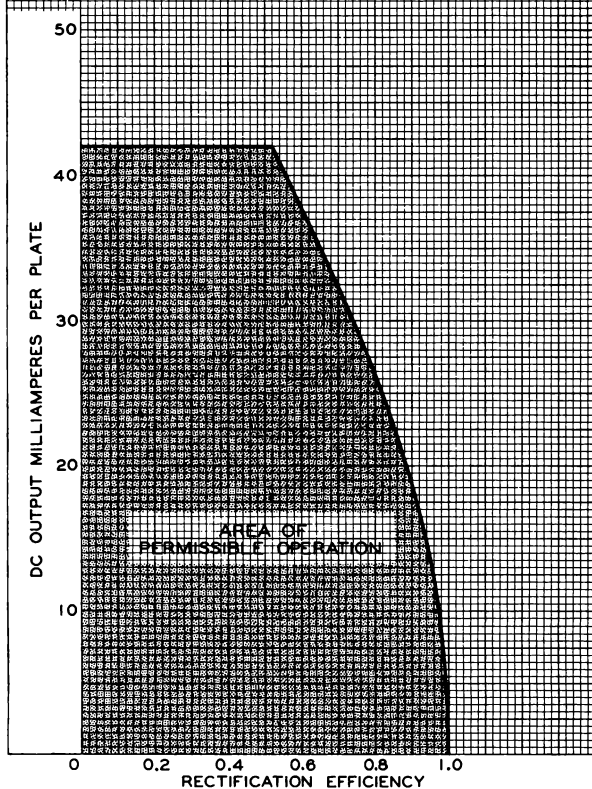


6X4

RATING CHART II
CAPACITOR INPUT TO FILTER $E_f = 6.3$ VOLTS

MAX. PEAK PLATE CURRENT PER PLATE = 210 MA.

$$\text{RECTIFICATION EFFICIENCY} = \frac{\bar{E}}{\sqrt{2} E_s}$$

WHERE $\bar{E}$ = DC OUTPUT VOLTS AT INPUT TO FILTER E_s = AC PLATE SUPPLY VOLTS (RMS) PER PLATE

JUNE 26, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8024

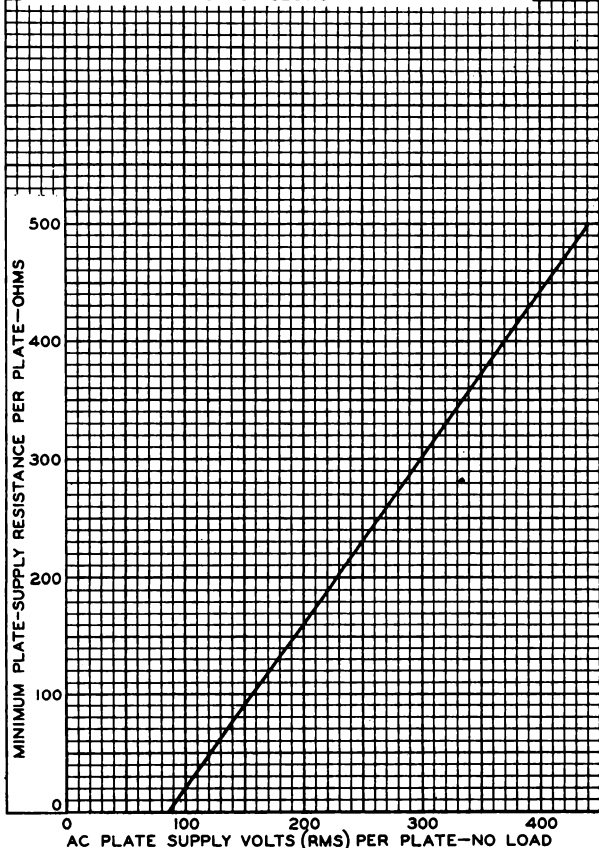
6X4



6X4

RATING CHART III CAPACITOR INPUT TO FILTER

$E_f = 6.3$ VOLTS MAX. HOT SWITCHING CUR. = 1 AMP.
 PLATE-SUPPLY RESISTANCE PER PLATE = $R_{SEC} + N^2 R_{PRI} + R_A$
 WHERE R_{SEC} = DC RESISTANCE OF TRANSFORMER
 SECONDARY PER SECTION
 R_{PRI} = DC RESISTANCE OF TRANSFORMER
 PRIMARY
 R_A = DC RESISTANCE OF ADDED SERIES
 RESISTANCE PER PLATE
 N = TRANSFORMER VOLTAGE STEP-UP
 RATIO PER SECTION



JUNE 29, 1953

TUBE DEPARTMENT

92CM-8026

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6X4

6X4

OPERATION CHARACTERISTICS FULL-WAVE CIRCUIT, CAPACITOR INPUT TO FILTER

 $E_f = 6.3$ VOLTSCAPACITOR (C) INPUT TO FILTER: $C = 10\mu f$

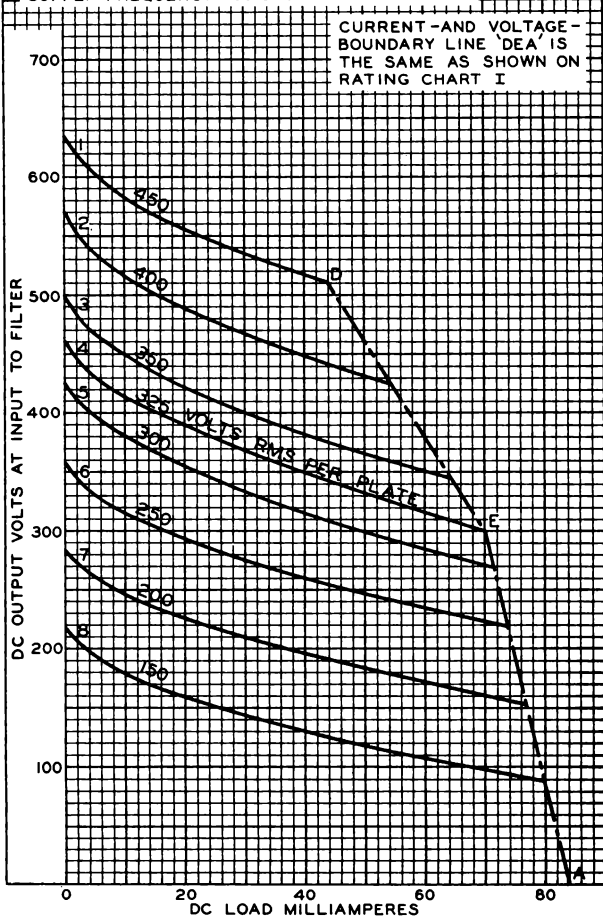
TOTAL EFFECTIVE PLATE-SUPPLY RESISTANCE

PER PLATE { 520 OHMS FOR CURVES 1-5

400 OHMS FOR CURVES 6-8

SUPPLY FREQUENCY = 60 CPS

CURRENT-AND VOLTAGE-
BOUNDARY LINE 'DEA' IS
THE SAME AS SHOWN ON
RATING CHART I



JULY 3, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

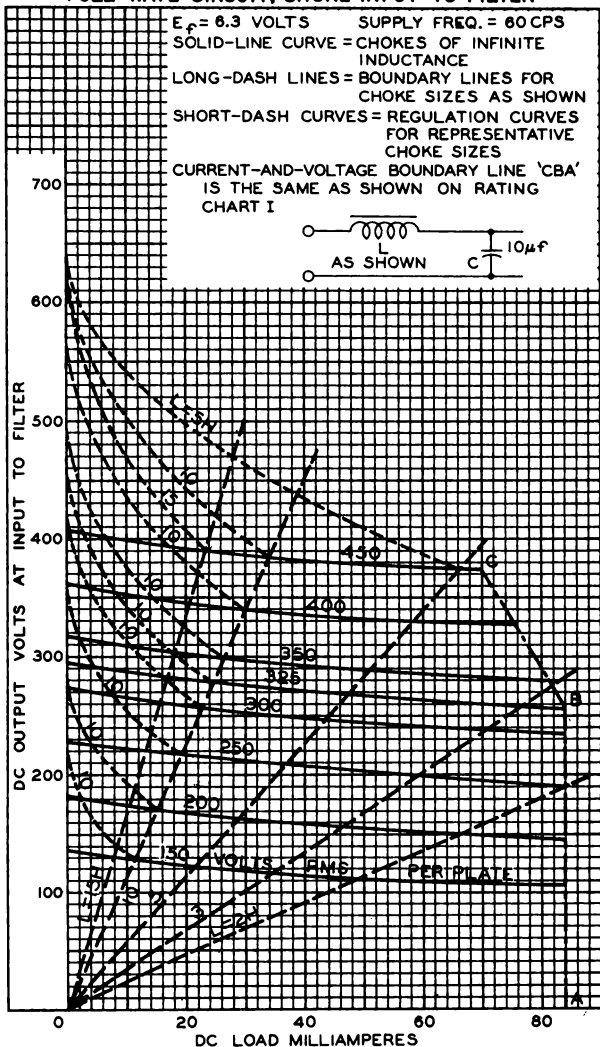
92CM-8031

6X4



6X4

OPERATION CHARACTERISTICS FULL-WAVE CIRCUIT, CHOKE INPUT TO FILTER



JUNE 30, 1953

 TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8030



6X5, 6X5-GT/G

6X5
6X5-GT/G

FULL-WAVE HIGH-VACUUM RECTIFIER

Heater	Coated Unipotential Cathode		a-c or d-c volts
Voltage	6.3		amp.
Current	0.6		
	6X5	6X5-GT/G	
Maximum Overall Length	3-1/4"	3-5/16"	
Maximum Seated Height	2-11/16"	2-3/4"	
Maximum Diameter	1-5/16"	1-5/16"	
Bulb	Metal Shell, MT-8		T-9
Base	{ Small Wafer		{ Intermed. Sh.
Basing Designation	{ Octal 6-Pin		{ Octal 6-Pin
Pin 1 { 6X5, Shell	6S		G-6S
Pin 2 { 6X5-GT/G, No Con.			Pin 5 - Plate #1
Pin 3 - Heater			Pin 7 - Heater
Pin 3 - Plate #2			Pin 8 - Cathode
Mounting Position			{ 6X5: Vertical
			{ 6X5-GT/G: Any

BOTTOM VIEW

Maximum Ratings Are Design-Center Values

FULL-WAVE RECTIFIER

Peak Inverse Plate Voltage	1250 max. volts
Peak Plate Current per Plate	210 max. ma.
D-C Output Current:	
With condenser input to filter	70 max. ma.
With choke input to filter	70 max. ma.
D-C Heater-Cathode Potential	450 max. volts

Typical Operation:

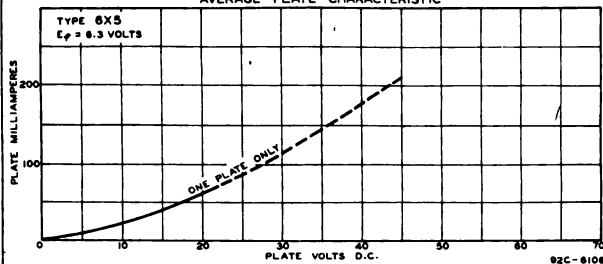
	Condenser- Input Filter	Choke- Input Filter
A-C Plate-to-Plate		
Supply Voltage (RMS)	650	900 volts
Filter Input Condenser	4	— μ f
Min. Total Effect. Plate- Supply Imped. per Plate	150	— ohms
Filter Input Choke	—	8 henries
D-C Output Current	70	70 ma.
D-C Voltage (At input to filter):*		
At half-load current (35 ma.)	405	385 volts
At full-load current (70 ma.)	370	380 volts
Difference (Voltage Regulation)	35	5 volts
Percentage Regulation	8.5	1.3 %

◇ Horizontal operation permitted if pins 3 & 5 are in a horizontal plane.

* For choke not less than 8 henries.

• Approximate values.

AVERAGE PLATE CHARACTERISTIC



Mar. 20, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

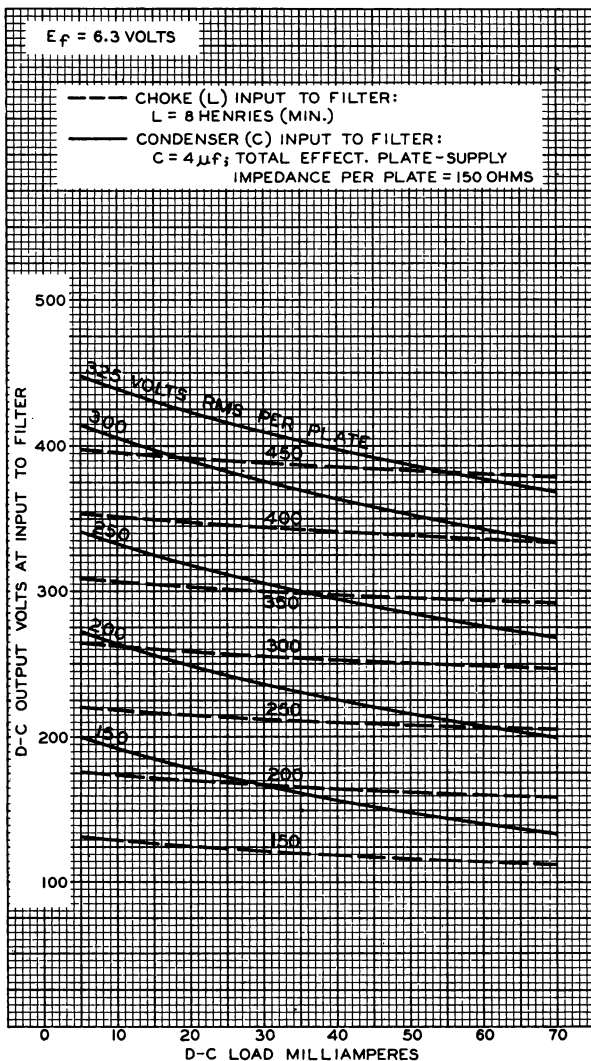
92C-6108

6X5



6X5

OPERATION CHARACTERISTICS



NOV. 15, 1939

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92C-4576R1



6X8

6X8

TRIODE-PENTODE CONVERTER

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.45 amp

Direct Interelectrode

Capacitances:

Without

With External

External

Shield No. 315

Shield

Tied to Cathode

Triode Unit:

Grid to Plate 1.4 1.4 μf Input 2.0 2.6 μf Output 0.5 1.0 μf

Pentode Unit:

Grid No.1 to Plate 0.09 max. 0.06 max. μf Input 4.3 4.5 μf Output 0.7 1.4 μf

Pentode Grid No.1

to Triode Plate 0.045 max. 0.035 max. μf

Pentode Plate to

Triode Plate 0.040 max. 0.008 max. μf

Pentode Unit Connected as Triode:▲

Grid No.1 to Plate 1.4 1.3 μf Input 3.0 3.2 μf Output 1.6 2.0 μf Heater to Cathode 6.0 6.0 μf ←

Mechanical:

Mounting Position Any

Maximum Overall Length 2-3/16"

Maximum Seated Length 1-15/16"

Length, Base Seat to Bulb Top (Excluding Tip). 1-9/16" $\pm$ 3-32"

Maximum Diameter 7/8"

Bulb. T-6-1/2

Base. Small-Button Noval 9-Pin (JETEC No.E9-1)

Basing Designation for BOTTOM VIEW 9AK

Pin 1 - Pentode

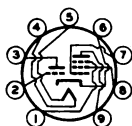
Grid No.3

Pin 2 - Triode Grid

Pin 3 - Triode Plate

Pin 4 - Heater

Pin 5 - Heater



Pin 6 - Cathode

Pin 7 - Pentode

Grid No.1

Pin 8 - Pentode

Grid No.2

Pin 9 - Pentode Plate

Characteristics:

Triode Unit Pentode Unit

Plate Voltage 100 250 volts

Grid No.3 (Suppressor) - Connected to cathode at socket

Grid-No.2 Voltage - 150 volts

▲: See next page.

← Indicates a change

OCT. 1, 1953

TUBE DEPARTMENT

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6X8



TRIODE-PENTODE CONVERTER

	Triode Unit	Pentode Unit	
Cathode-Bias Resistor . . .	100	200	ohms
Amplification Factor . . .	40	-	
Plate Resistance (Approx.) .	6900	750000	ohms
Transconductance	5800	4600	μ mhos
Grid-No.1 Bias (Approx.) for			
Plate Cur. of 10 μ amp . .	-10	-10	volts
Plate Current	8.5	7.7	ma
Grid-No.2 Current	-	1.6	ma

Pentode Unit Connected as Triode

Plate Voltage	150	volts
Grid No.3	Connected to cathode at socket	
Grid No.2	Tied to plate	
Cathode-Bias Resistor	250	ohms
Amplification Factor	42	
Plate Resistance (Approx.)	7900	ohms
Transconductance	4000	μ mhos
Grid-No.1 Bias (Approx.)		
for Plate Current of 10 μ amp	-10	volts
Plate Current	7.8	ma

CONVERTER SERVICE

Maximum Ratings, Design-Center Values:

	Triode Unit as Osc.	Pentode Unit as Mixer	
PLATE VOLTAGE	250 max.	250 max.	volts
GRID-No.3 (SUPPRESSOR) VOLTAGE. . .	-	0 max.	volts
GRID-No.2 (SCREEN) VOLTAGE. . .	-	See Rating Curve at front of this Section	
GRID-No.2 SUPPLY VOLTAGE. . .	-	250 max.	volts
GRID-No.1 (CONTROL-GRID) VOLT.: Negative bias value . . .	40 max.	40 max.	volts
Positive bias value . . .	0 max.	0 max.	volts
PLATE DISSIPATION	1.5 max.	2.0 max.	watts
GRID-No.2 INPUT	-	0.4 max.	watt
GRID-No.1 INPUT	0.5 max.	-	watt
PEAK HEATER-CATHODE VOLTAGE: Heater negative with respect to cathode . .	100 max.	100 max.	volts
Heater positive with respect to cathode . .	100 max.	100 max.	volts

Pentode Unit as Triode-Connected Mixer^A

PLATE VOLTAGE	250 max.	volts
-------------------------	----------	-------

^A: See next page.

OCT. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1



6X8

6X8

TRIODE-PENTODE CONVERTER

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Negative bias value 40 max. volts

Positive bias value 0 max. volts

PLATE DISSIPATION 2.4 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 100 max. volts

Heater positive with respect to cathode 100 max. volts

Typical Operation:

	Triode Unit as 250-Mc Osc.*	Pentode Unit as Mixer*	
Plate Voltage	150	150	volts
Grid No.3 (Suppressor). . .	-	Connected to cathode at socket	
Grid-No.2 Voltage	-	150	volts
Mixer Grid-No.1			
Supply Voltage.	-	-3.5	volts
Oscillator Voltage (rms)			
at Mixer Grid No.1 . . .	-	2.6	volts
Mixer Grid-No.1-Circuit			
Resistance.	-	120000	ohms
Oscillator Grid Resistor .	2700	-	ohms
Conversion Transconductance	-	2100	μ mhos
Plate Current	13	6.2	ma
Grid-No.2 Current	-	1.8	ma
Grid-No.1 Current	3.6	-	ma
Grid-No.1 Current	-	2.0	μ amp
Oscillator Power			
Output (Approx.).	0.5	-	watt

Pentode Unit as Triode-Connected Mixer [▲]

Plate Voltage	150	volts
Grid-No.1 Supply Voltage	-3.5	volts
Oscillator Voltage (rms) at Grid No.1	2.6	volts
Grid-No.1-Circuit Resistance.	120000	ohms
Conversion Transconductance	2800	μ mhos
Plate Current	7.8	ma
Grid-No.1 Current	2.0	μ amp

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation 0.1 max. megohm

For cathode-bias operation. 0.5 max. megohm

[▲] Grid No.3 connected to cathode; grid No.2 connected to plate.^{*} With separate excitation and triode unit grounded.[●] In TV or FM receivers, it is generally desirable to operate the oscillator with less power input than shown in the tabulated data in order to avoid over-excitation and excessive oscillator radiation.

OPERATING CONSIDERATIONS

When the 6X8 is used as the converter in AM broadcast receivers, it is important that the tuned plate-load impedance of the first if coil not exceed 75000 ohms. Any higher value will cause excessive degeneration due to feedback in the pentode mixer unit.

← indicates a change

SEPT. 1. 1952

TUBE DEPARTMENT

TENTATIVE DATA 2

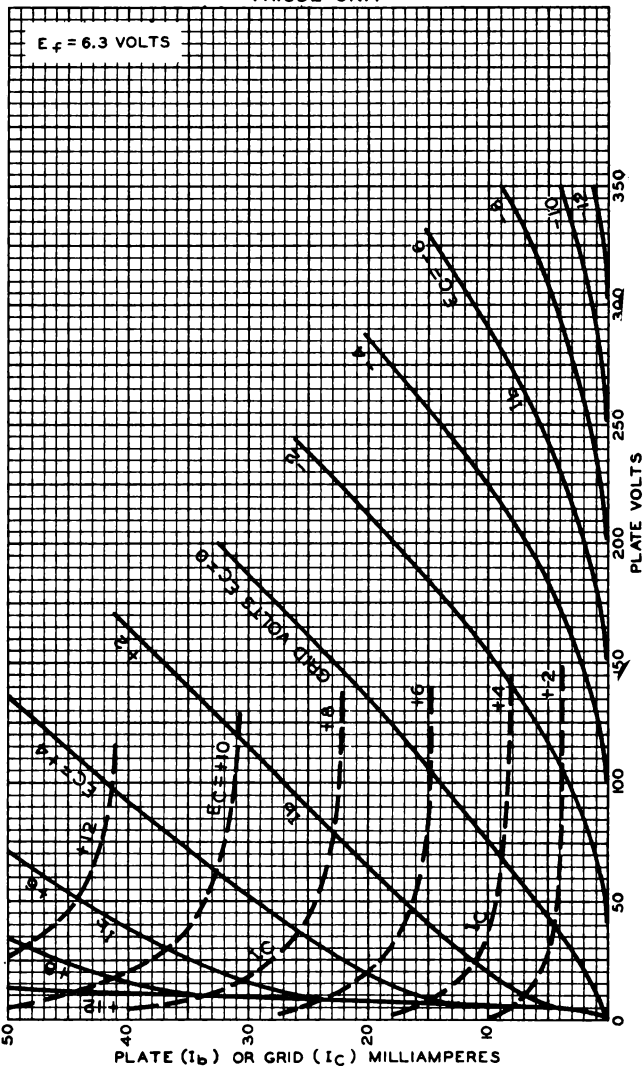
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6X8



6X8

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



AUG. 28, 1950

TUBE DEPARTMENT

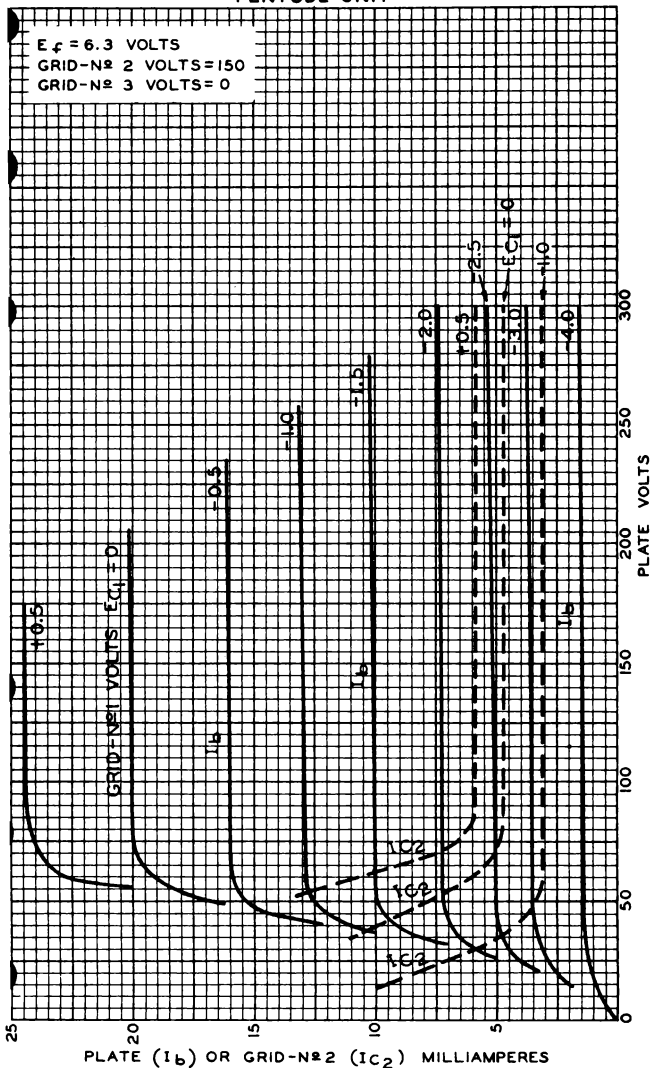
92CM-7531

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6X8

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT



AUG. 29, 1950

TUBE DEPARTMENT

92CM-7532

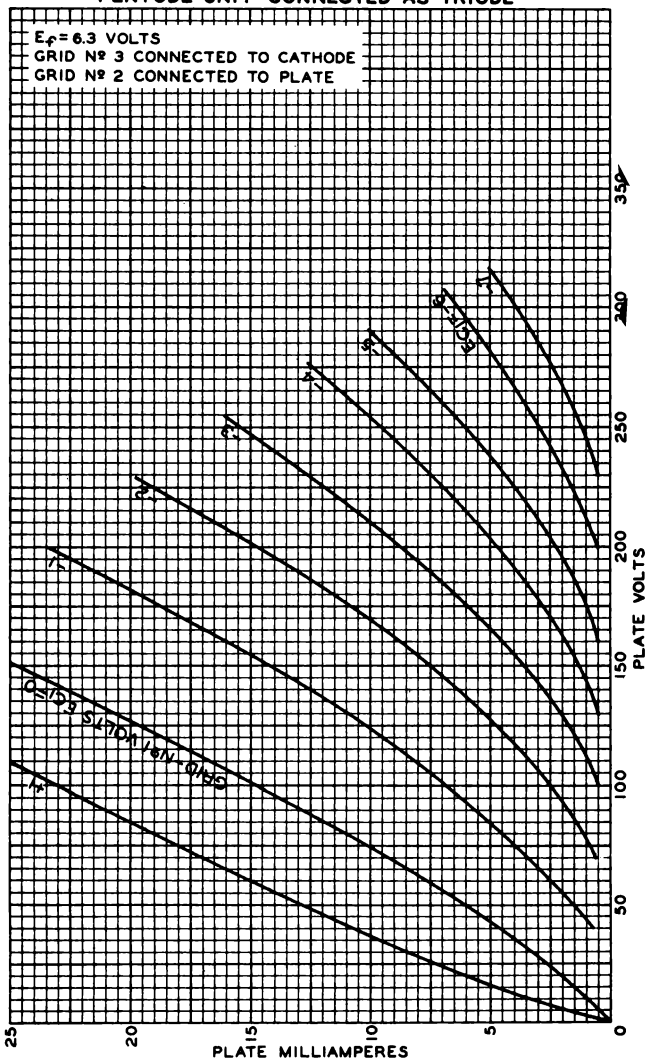
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6X8



6X8

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT CONNECTED AS TRIODE



APRIL 29, 1952

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

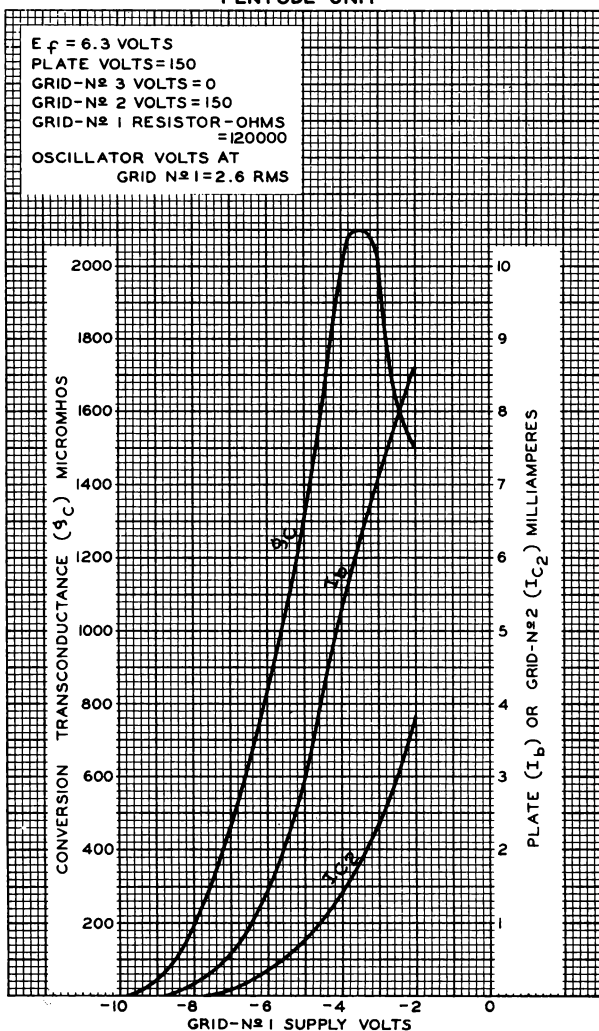
92CM-7599R1



6X8

6X8

OPERATION CHARACTERISTICS
WITH SEPARATE OSCILLATOR EXCITATION
PENTODE UNIT



JUNE 19, 1951

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

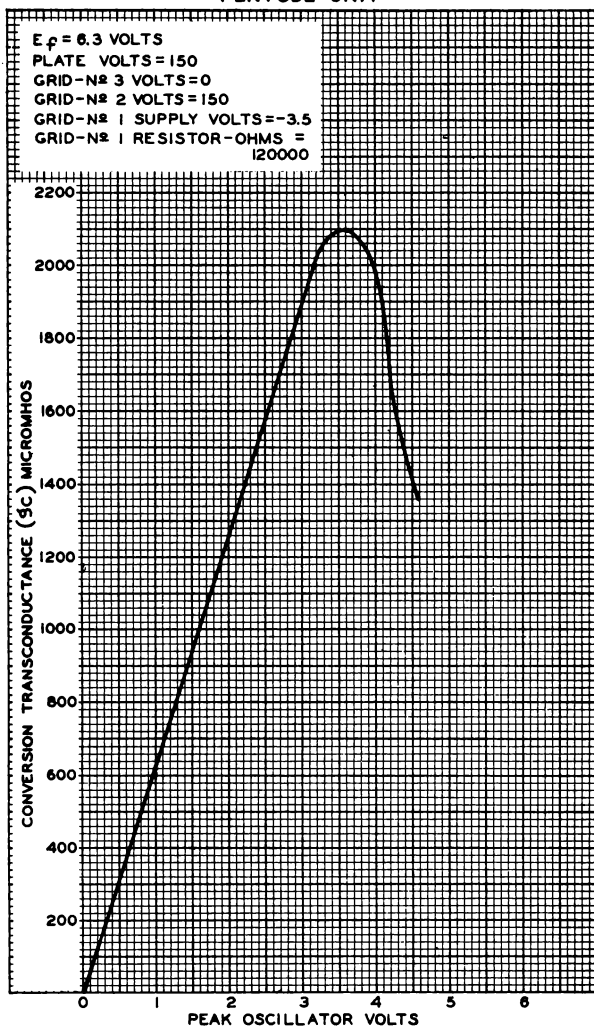
92CM-7547RI

6X8



6X8

OPERATION CHARACTERISTIC
WITH SEPARATE OSCILLATOR EXCITATION
PENTODE UNIT



JUNE 18, 1951

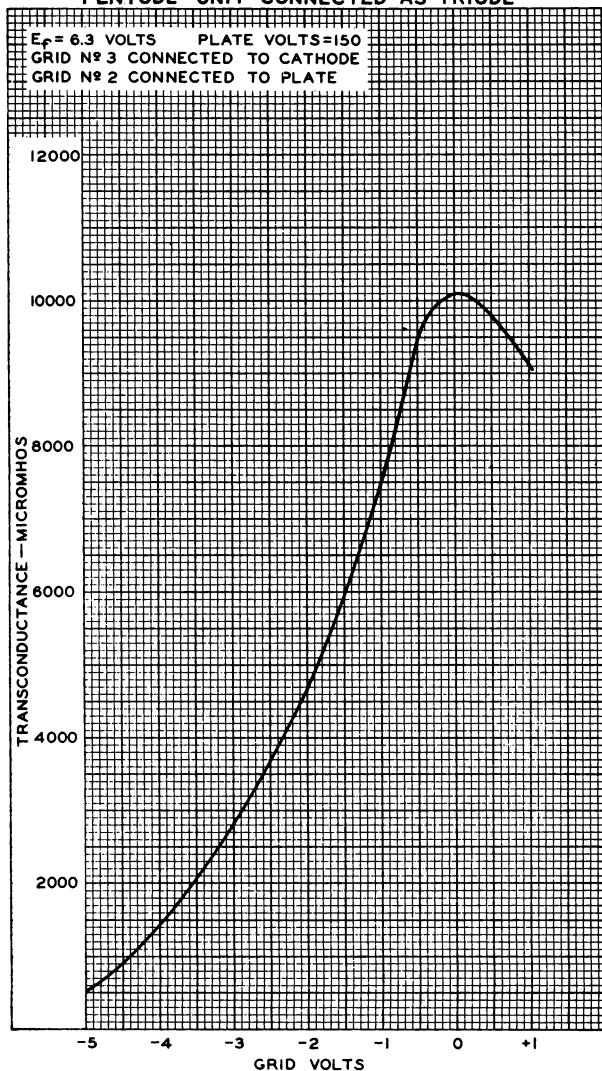
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7546R1



6X8

AVERAGE CHARACTERISTIC PENTODE UNIT CONNECTED AS TRIODE



APRIL 29, 1952

TUBE DEPARTMENT

92CM-7644



6Y6-G

BEAM POWER AMPLIFIER

6Y6-G

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 1.25 amp

Direct Interelectrode Capacitances (Approx.):^oGrid No.1 to Plate 0.7 μf Input. 15 μf Output. 11 μf ^o With no external shield.

Mechanical:

Mounting Position. Any

Maximum Overall Length. 4-5/8"

Seated Length. 3-7/8" + 3/16" - 5/16" ←

Maximum Diameter. 1-13/16"

Bulb ST-14

Base Medium-Shell Octal 7-Pin

Basing Designation for BOTTOM VIEW G-7AC

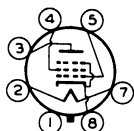
Pin 1-No

Connection

Pin 2-Heater

Pin 3-Plate

Pin 4-Grid No.2



Pin 5-Grid No.1

Pin 7-Heater

Pin 8-Cathode,
Grid No.3AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 200 max. volts

GRID-No.2 (SCREEN) VOLTAGE 135 max. volts

PLATE DISSIPATION. 12.5 max. watts

GRID-No.2 DISSIPATION. 1.75 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 180 max. volts

Heater positive with respect to cathode 180 max. volts

Typical Operation and Characteristics:

Plate Voltage. 135 200 volts

Grid-No.2 Voltage. 135 135 volts

Grid-No.1 (Control-Grid) Voltage . . . -13.5 -14 volts

Peak AF Grid-No.1 Voltage. 13.5 14 volts

Zero-Signal Plate Current. 58 61 ma

Max.-Signal Plate Current. 60 66 ma

Zero-Signal Grid-No.2 Current. 3.5 2.2 ma

Max.-Signal Grid-No.2 Current. 11.5 9.0 ma

Plate Resistance (Approx.) 9300 18300 ohms

Transconductance 7000 7100 μmhos

Load Resistance. 2000 2600 ohms

←Indicates a change.

SEPT. 15, 1949

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6Y6-G



6Y6-G

BEAM POWER AMPLIFIER

Total Harmonic Distortion.	10	10	%
Max.-Signal Power Output	3.6	6.0	watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias	0.1	megohm
For cathode bias	0.5	megohm

OSCILLATOR - Class C*For Television High-Voltage RF Supplies***Maximum Ratings, Design-Center Values:**

DC PLATE VOLTAGE	350 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	135 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE.	-90 max.	volts
DC PLATE CURRENT	80 max.	ma
DC GRID-No.1 CURRENT	1.5 max.	ma
PLATE INPUT.	23 max.	watts
GRID-No.2 INPUT.	0.6 max.	watt
PLATE DISSIPATION.	8 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	180 max.	volts
Heater positive with respect to cathode	180 max.	volts

Typical Operation:

DC Plate Voltage	350	volts
DC Grid-No.2 Voltage ^{□□}	115	volts
	5000	ohms
	-40	volts
DC Grid-No.1 Voltage†	30000	ohms
	600	ohms
Peak RF Grid-No.1 Voltage.	48	volts
DC Plate Current	60	ma
DC Grid-No.2 Current	5.1	ma
DC Grid-No.1 Current (Approx.)	1.4	ma
Driving Power (Approx.)	0.1	watt
Power Output (Approx.)	14	watts

^{□□} obtained from a separate source, from the plate-voltage supply with a potentiometer, or through a series resistor of value shown.

† obtained from a fixed supply, by grid resistor (30000), by cathode resistor (600) or by combination methods.

SEPT. 15, 1949

TUBE DEPARTMENT

DATA

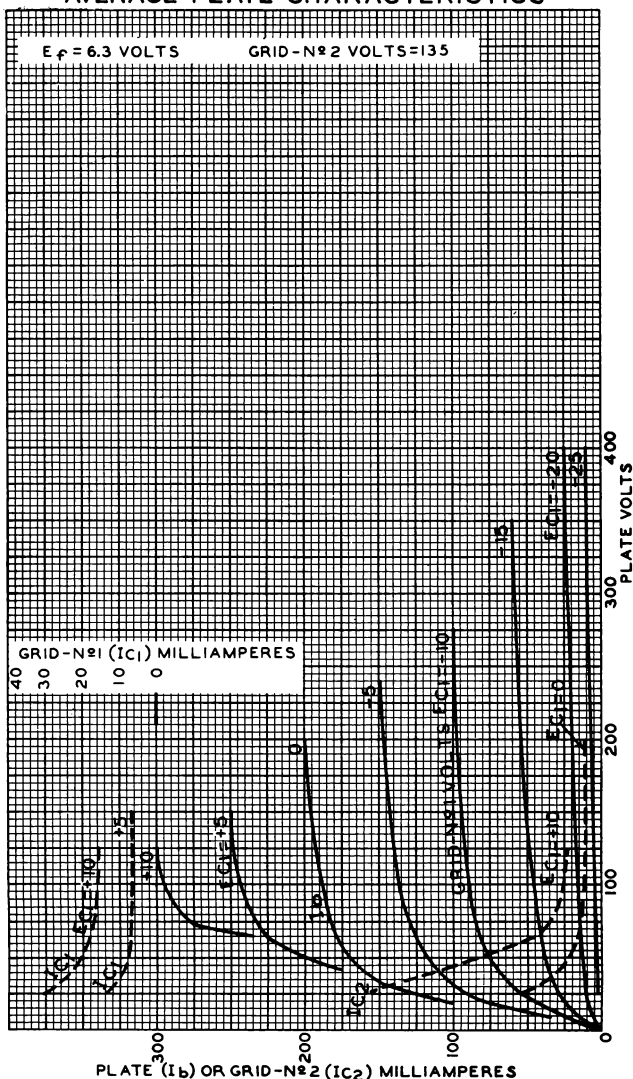
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6Y6-G

6Y6-G

AVERAGE PLATE CHARACTERISTICS



SEPT. 11, 1946

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

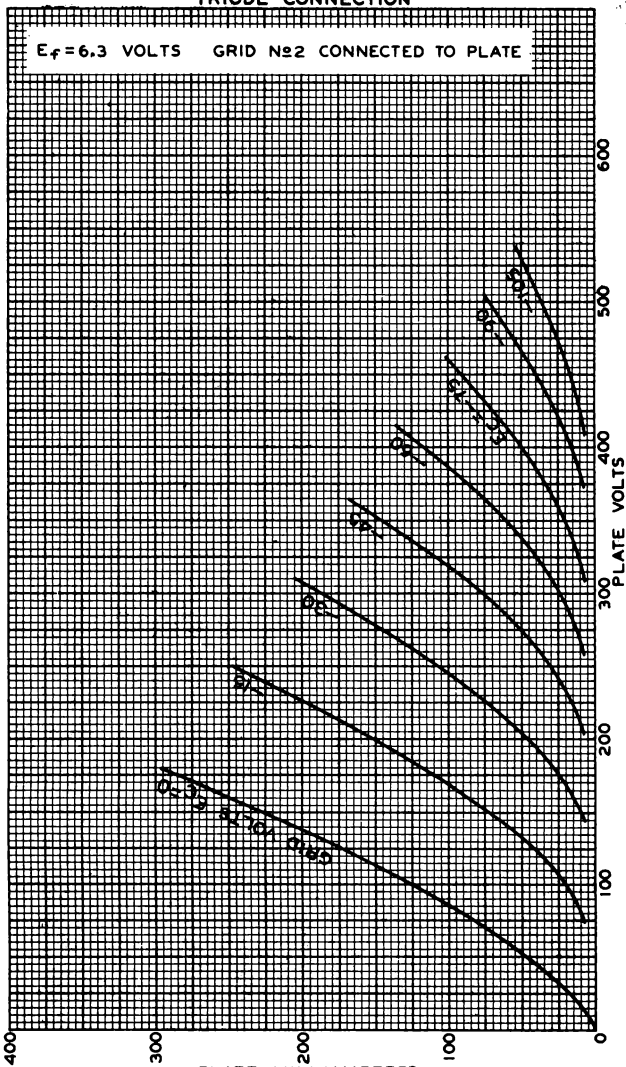
92CM-6127R1

6Y6-G



6Y6-G

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



FEB. 8, 1944

PLATE MILLIAMPERES
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6538



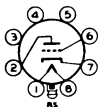
7A4



7A4

DETECTOR AMPLIFIER TRIODE

Heater	Coated Unipotential Cathode
Voltage	6.3 [□] a-c or d-c volts
Current	0.3 ^{□□} amp.
Direct Interelectrode Capacitances: [○]	
Grid to Plate	4.0 μ f
Grid to Cathode	3.4 μ f
Plate to Cathode	3.0 μ f
Maximum Overall Length	2-25/32"
Maximum Seated Height	2-1/4"
Maximum Diameter	1-3/16"
Bulb	T-9
Base	Lock-in 8-Pin
Pin 1-Heater	Pin 6-Grid
Pin 2-Plate	Pin 7-Cathode
Pin 3-No Connection	Pin 8-Heater
Pin 4-No Connection	Plug - Base Shell
Pin 5 { Internal con. Do Not Use	



Mounting Position BOTTOM VIEW (5A₂) Any

Maximum Ratings, Typical Operating Conditions, and Curves for Type 7A4 are the same as for Type 6J5.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- Nominal voltage = 7.0 volts.
- Nominal current = 0.32 ampere.
- With close-fitting shield connected to cathode. Values are approximate.

May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

7A5



7A5

BEAM POWER AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	6.3 [□]	a-c or d-c volts
Current	0.75 ^{□□}	amp.
Maximum Overall Length		3-5/32"
Maximum Seated Height		2-5/8"
Maximum Diameter		1-3/16"
Bulb		T-9
Base		Lock-in 8-Pin
Pin 1-Heater		Pin 6-Grid
Pin 2-Plate		Pin 7-Cathode
Pin 3-Screen		Pin 8-Heater
Pin 4-No Connection		Plug - Base Shell
Pin 5-No Connection		
Mounting Position		Any



BOTTOM VIEW (6AA)

AMPLIFIER

Plate Voltage	125 max. volts
Screen Voltage	125 max. volts
Plate Dissipation	5.5 max. watts
Screen Dissipation	1.2 max. watts

Typical Operation and Characteristics-Class A₁ Amplifier:

Heater	6.3 [□]	6.3 [□]	volts
Plate	110	125	volts
Screen	110	125	volts
Grid	-7.5	-9	volts
Peak A-F Grid Voltage	7.5	9	volts
Zero-Sig. Plate Cur.	40	44	ma.
Max.-Sig. Plate Cur.	41	45	ma.
Zero-Sig. Screen Cur. (Approx.)	3	3.3	ma.
Max.-Sig. Screen Cur. (Approx.)	7	9.5	ma.
Plate Res. (Approx.)	14000	17000	ohms
Transcond.	5800	6000	μmhos
Load Res.	2500	2700	ohms
Total Harmonic Dist.	10	10	%
Max.-Sig. Power Output	1.5	2.2	watts

■ In circuits where the cathode is not connected directly to the heater, the potential difference between heater and cathode should be kept as low as possible.

□ Nominal voltage = 7 volts.

□□ Nominal current = 0.80 ampere.

▲ The type of input coupling should not introduce too much resistance in the grid circuit. Transformer- or impedance-input coupling devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not to exceed 0.5 megohm.

May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



7A6

7A6 TWIN DIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage. 6.3[□] ac or dc volts

Current. 0.15^{□□} amp

Direct Interelectrode Capacitances (Approx.):[○]

Plate to Cathode

(Diode No.1) . . . 2.0 μf

Plate to Cathode

(Diode No.2) . . . 2.6 μf

Plate of Diode No.1 to

Plate of Diode No.2 . 0.1 max. μf

[○] With external shield connected to cathodes.

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

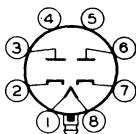
Basing Designation for BOTTOM VIEW 7AJ

Pin 1 - Heater

Pin 2 - Cathode of
Diode No.2

Pin 3 - Plate of
Diode No.2

Pin 4 - No
Connection



Pin 5 - Internal
Shield

Pin 6 - Plate of
Diode No.1

Pin 7 - Cathode of
Diode No.1

Pin 8 - Heater
Plug - Base Shell

Maximum Ratings, Design-Center Values (Each Diode):

RMS PLATE VOLTAGE. 150 max. volts

PEAK PLATE CURRENT 45 max. ma.

DC OUTPUT CURRENT 8 max. ma.

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 330 max. volts

Heater positive with respect to cathode. 330 max. volts

[□] Nominal voltage = 7.0 volts.

^{□□} Nominal current = 0.160 ampere.

JUNE 20, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

7A7



7A7

REMOTE-CUTOFF PENTODE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3^a ac or dc voltsCurrent. 0.3^{aa} ampDirect Interelectrode Capacitances:^oGrid No.1 to Plate . . . 0.005 max. μf Input. 5.5 μf Output 7.0 μf ^o With no external shield.**Mechanical:**

Mounting Position. Any

Maximum Overall Length 2-25/32"

Maximum Seated Length 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

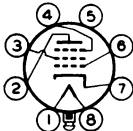
Basing Designation for BOTTOM VIEW 8V

Pin 1-Heater

Pin 2-Plate

Pin 3-Grid No.2

Pin 4-Grid No.3

Pin 5-Internal
Shield

Pin 6-Grid No.1

Pin 7-Cathode

Pin 8-Heater

Plug -Base
Shell

*Maximum Ratings, Characteristics, and Typical Operating
Conditions are the same as those for Type 6SK7*

^a Nominal voltage = 7.0 volts.^{aa} Nominal current = 0.32 ampere.

JUNE 20, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7A8



7A8

OCTODE CONVERTER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Direct Interelectrode Capacitances:		
Grid No. 4 to Plate	0.15	max. uuf
Grid No. 4 to Grid No. 2	0.15	uuf
Grid No. 4 to Grid No. 1	0.15	uuf
Grid No. 1 to Grid No. 2	0.60	uuf
Grid No. 4 to All Other Electrodes = R-F Input	7.5	uuf
Grid No. 2 to All Other Electrodes		
Except Grid No. 1 (Osc. Output)	3.4	uuf
Grid No. 1 to All Other Electrodes		
Except Grid No. 2 (Osc. Input)	3.8	uuf
Plate to All Other Electrodes	9	uuf
Maximum Overall Length	2-25/32"	
Maximum Seated Height	2-1/4"	
Maximum Diameter	1-3/16"	
Bulb		
Base		
Pin 1 - Heater		Lock-in 8-Pin
Pin 2 - Plate		Pin 6 - Grid #4
Pin 3 - Grid #2		Pin 7 - Cathode
Pin 4 - Grid #1		Pin 8 - Heater
Pin 5 - Grids #3 & #5		Plug - Base Shell
Mounting Position		Any



BOTTOM VIEW (8U)

CONVERTER SERVICE

Plate Voltage	300	max.	volts
Screen (Grids #3 & #5) Voltage	100	max.	volts
Screen Supply Voltage	300	max.	volts
Anode-Grid (Grid #2) Voltage	200	max.	volts
Anode-Grid Supply Voltage	300	max.	volts
Control-Grid (Grid #4) Voltage	0	min.	volts
Plate Dissipation	1.0	max.	watt
Screen Dissipation	0.3	max.	watt
Anode-Grid Dissipation	0.75	max.	watt
Total Cathode Current	13	max.	ma.
Typical Operation and Characteristics:			
Plate Voltage	100		volts
Screen Voltage	75		volts
Anode-Grid Voltage	100		volts
Anode-Grid Supply Voltage	-	250	volts
Control-Grid Voltage	-	250	volts
Oscillator-Grid (Grid #1) Res.	50000	50000	ohms
Plate Resistance	0.65	0.7	approx. megohm
Conversion Transconductance	375	550	μmhos
Conversion Transconductance for Grid Bias of -30 volts	-	2	approx. μmhos
Plate Current	1.8	3.0	ma.
Screen Current	2.7	3.2	ma.
Anode-Grid Current	2.8	4.2	ma.
Oscillator-Grid Current	0.2	0.4	ma.
Total Cathode Current	8.5	10.8	ma.

NOTE: The transconductance between Grid #1 and Grid #2 (not oscillating) is approximately 1600 μmhos under the following conditions: plate volts, 250; screen volts, 100; anode-grid volts, 180; oscillator-grid volts, 0; and control-grid connected to cathode.

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

□ With close-fitting shield connected to cathode.

□ Nominal voltage = 7.0 volts.

□ Nominal current = 0.16 ampere.

▲ Applied through a properly by-passed 20000-ohm voltage-dropping resistor.

← Indicates a change.

May 1, 1941

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



7AD7

7AD7

POWER PENTODE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage 6.3[□] ac or dc voltsCurrent 0.6^{□□} ampDirect Interelectrode Capacitances:[○]Grid No.1 to Plate. 0.030 max. μ fInput 11.5 μ fOutput. 7.5 μ f[○] With external shield connected to cathode.**Mechanical:**

Mounting Position Any

Maximum Overall Length. 3-5/32"

Maximum Seated Length 2-5/8"

Maximum Diameter. 1-3/16"

Bulb. T-9

Base. Lock-In 8-Pin

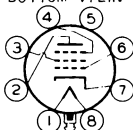
Basing Designation for BOTTOM VIEW. 8V

Pin 1—Heater

Pin 2—Plate

Pin 3—Grid No.2

Pin 4—Grid No.3

Pin 5—Internal
Shield

Pin 6—Grid No.1

Pin 7—Cathode

Pin 8—Heater

Plug—Base

Shell

AMPLIFIER—Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE. 150 max. volts

GRID-No.2 SUPPLY VOLTAGE. 300 max. volts

PLATE DISSIPATION 10 max. watts

GRID-No.2 DISSIPATION 1.2 max. watts

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value 0 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

Plate Voltage 300 volts

Grid No.3 (Suppressor). Connected to cathode at socket

Grid-No.2 Voltage 150 volts

Cathode-Bias Resistor 68 ohms

Plate Resistance (Approx.). 0.3 megohm

Transconductance. 9500 μ mhos

Plate Current 28 ma

Grid-No.2 Current 7 ma

[□] Nominal voltage = 7.0 volts.^{□□} Nominal current = 0.16 ampere.

MAY 20, 1949

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



7AF7

MEDIUM-MU TWIN TRIODE

7AF7
7AG7

Heater, for Unipotential Cathode:

Voltage. 6.3[□] ac or dc volts

Current. 0.3^{□□} amp

The 7AF7 is the same as the 14AF7 except for heater rating.

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.32 ampere.

7AG7

SHARP-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3[□] ac or dc volts

Current. 0.15^{□□} amp

Direct Interelectrode Capacitances:[○]

Grid No.1 to Plate . . . 0.005 max. μf

Input. 7 μf

Output 6 μf

○ With external shield connected to cathode.

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8V

Pin 1-Heater

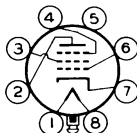
Pin 2-Plate

Pin 3-Grid No.2

Pin 4-Grid No.3

Pin 5-Internal

Shield



Pin 6-Grid No.1

Pin 7-Cathode

Pin 8-Heater

Plug - Base

Shell

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 300 max. volts

PLATE DISSIPATION. 2 max. watts

GRID-No.2 DISSIPATION. 0.75 max. watt

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Negative bias value. 1 min. volt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.16 ampere.

JUNE 15, 1948

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

7AG7



7AG7

SHARP-CUTOFF PENTODE

Typical Operation and Characteristics:

Plate Voltage.	250	..	volts
Grid No.3 (Suppressor) .	Connected to cathode at socket		
Internal Shield.	Connected to cathode at socket		
Grid-No.2 Voltage.	250	..	volts
Cathode-Bias Resistor*	250	..	ohms
Plate Resistance (Approx.)	0.75	..	megohm
Transconductance	4200	..	μ mhos
Grid-No.1 Bias (Approx.) for plate current of 10 μ a	-10	..	volts
Plate Current.	6	..	ma
Grid-No.2 Current.	2	..	ma

* Fixed-bias operation is not recommended.

JUNE 15, 1948

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7AH7

REMOTE-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3[□] ac or dc volts

Current. 0.15^{□□} amp

Direct Interelectrode Capacitances:[○]

Grid No.1 to Plate . . . 0.005 max. μmf

Input. 7 μmf

Output 6.5 μmf

[○]With external shield connected to cathode.

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8V

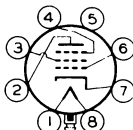
Pin 1-Heater

Pin 2-Plate

Pin 3-Grid No.2

Pin 4-Grid No.3

Pin 5-Internal
Shield



Pin 6-Grid No.1

Pin 7-Cathode

Pin 8-Heater

Plug - Base
Shell

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 300 max. volts

PLATE DISSIPATION. 2 max. watts

GRID-No.2 DISSIPATION. 0.7 max. watt

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Negative bias value. -1 min. volt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

Plate Voltage. 250 volts

Grid No.3 (Suppressor) Connected to cathode at socket

Internal Shield. Connected to cathode at socket

Grid-No.2 Voltage. 250 volts

Cathode-Bias Resistor *. 250 ohms

Plate Resistance (Approx.) 1 megohm

Transconductance 3300 μmhos

Grid-No.1 Bias (Approx.) for
transconductance of 35 μmhos -20 volts

* Fixed bias not recommended.

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.16 ampere.

FEB. 1, 1949

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

7AH7



7AH7

REMOTE-CUTOFF PENTODE

Plate Current.	6.8	ma
Grid-No.2 Current.	1.9	ma

FEB. 1, 1949

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7AU7

7AU7

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

*Intended for use in equipment having
series heater-string arrangement*

The 7AU7 is the same as the 12AU7 except for the following items:

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage.	7.0	3.5	ac or dc volts
Current.	0.3	0.6	amp
Warm-up time (Average) .	-	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.



7B4

HIGH-MU TRIODE

7B4

GENERAL DATA**Electrical:**

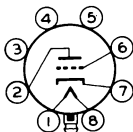
Heater, for Unipotential Cathode:

Voltage. 6.3[□] ac or dc volts
 Current. 0.3^{□□} amp

Mechanical:

Mounting Position. Any
 Maximum Overall Length 2-25/32"
 Maximum Seated Length. 2-1/4"
 Maximum Diameter 1-3/16"
 Bulb T-9
 Base Lock-in 8-Pin
 Basing Designation for BOTTOM VIEW 5AC

Pin 1 - Heater
 Pin 2 - Plate
 Pin 3 - No
 Connection
 Pin 4 - No
 Connection



Pin 5 - No
 Connection
 Pin 6 - Grid
 Pin 7 - Cathode
 Pin 8 - Heater
 Plug - Base Shell

*Maximum Ratings, Characteristics, and Typical Operating
 Conditions are the same as those for type 6SF5*

- Nominal voltage = 7.0 volts.
 □□ Nominal current = 0.32 ampere.

7B5



7B5

POWER PENTODE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3[□] ac or dc voltsCurrent. 0.4^{□□} amp**Mechanical:**

Mounting Position. Any

Maximum Overall Length 3-5/32"

Maximum Seated Length. 2-5/8"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 6AE

Pin 1 - Heater

Pin 2 - Plate

Pin 3 - Grid No.2

Pin 4 - No .

Pin 5 - No

Connection



Pin 6 - Grid No.1

Pin 7 - Cathode,
Grid No.3

Pin 8 - Heater

Plug - Base
Shell

*Maximum Ratings, Characteristics, and Typical Operating
Conditions are the same as those for Type 6K6-GT*

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.43 ampere.

JUNE 20, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7B6

TWIN DIODE—HIGH-MU TRIODE

7B6

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3[□] ac or dc voltsCurrent. 0.3^{□□} ampDirect Interelectrode Capacitances—Triode Unit:[○]Grid to Plate. 1.6 μf Grid to Cathode. 3.0 μf Plate to Cathode 2.4 μf [○] With external shield connected to cathode.**Mechanical:**

Mounting Position Any

Maximum Overall Length 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8W

Pin 1—Heater

Pin 2—Triode Plate

Pin 3—Triode Grid

Pin 4—Internal

Connection

Pin 5—Diode Plate

No.2



Pin 6—Diode

Plate No.1

Pin 7—Cathode,

Internal

Shield

Pin 8—Heater

Plug—Base Shell

TRIODE UNITAMPLIFIER—Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 300 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

Typical Operation and Characteristics:

Plate Voltage. 100 250 . . volts

Grid Voltage -1 -2 . . volts

Amplification Factor 100 100

Plate Resistance 110000 91000 . . ohms

Transconductance 900 1100 . . μmhos

Plate Current. 0.4 0.9 . . ma.

DIODE UNITS—Two

Consideration of these units, including typical circuits and diode curves, is given at the front of this Section.

[□] Nominal voltage = 7.0 volts.^{□□} Nominal current = 0.32 ampere.

7B7



7B7

REMOTE-CUTOFF PENTODE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage 6.3⁰ ac or dc voltsCurrent 0.15⁰⁰ ampDirect Interelectrode Capacitances:⁰Grid No.1 to Plate 0.007 max. $\mu\mu\text{f}$ Input 5.0 $\mu\mu\text{f}$ Output 6.0 $\mu\mu\text{f}$ ⁰ With external shield connected to cathode.**Mechanical:**

Mounting Position Any

Maximum Overall Length 2-25/32"

Maximum Seated Length 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

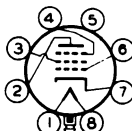
Basing Designation for BOTTOM VIEW 8V

Pin 1-Heater

Pin 2-Plate

Pin 3-Grid No.2

Pin 4-Grid No.3

Pin 5-Internal
Shield

Pin 6-Grid No.1

Pin 7-Cathode

Pin 8-Heater

Plug - Base
ShellAMPLIFIER - Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 100 max. volts

PLATE DISSIPATION 2.25 max. watts

GRID-No.2 DISSIPATION 0.25 max. watt

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value 0 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

Typical Operation and Characteristics:

Plate Voltage 100 250 . . volts

Grid No.3 (Suppressor) Connected to cathode at socket

Grid-No.2 Voltage 100 . . volts

Grid-No.1 Voltage -3 . . volts

Plate Resistance (Approx.) 0.3 0.75 . . megohm

Transconductance 1675 1750 . . μmhos

Grid-No.1 Bias (Approx.) for

transconductance of 10 μmhos -40 -40 . . volts

Plate Current 8.2 8.5 . . ma.

Grid-No.2 Current 1.8 1.7 . . ma.

⁰ Nominal voltage = 7.0 volts.⁰⁰ Nominal current = 0.160 ampere.

JUNE 20, 1947

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



7B8

PENTAGRID CONVERTER

7B8

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3[□] ac or dc voltsCurrent. 0.3^{□□} amp.Direct Interelectrode Capacitances:^o

Grid No.4 to All Other Electrodes (RF Input) 10.0 . . . μf

Plate to All Other Electrodes (Mixer Output) 9.0 . . . μf

Grid No.1 to All Other Electrodes except
Grid No.2 (Osc. Input) . . . 5.0 . . . μfGrid No.2 to All Other Electrodes except
Grid No.1 (Osc. Output) . . . 3.4 . . . μf

Grid No.4 to Plate 0.2 max. μf

Grid No.4 to Grid No.2 0.2 max. μf

Grid No.4 to Grid No.1 0.2 max. μf

Grid No.1 to Grid No.2 0.9 . . . μf

^o With external shield connected to cathode.

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8X

Pin 1 - Heater

Pin 2 - Plate

Pin 3 - Grid No.2

Pin 4 - Grid No.1

Pin 5 - Grid No.3,
Grid No.5

Pin 6 - Grid No.4

Pin 7 - Cathode

Pin 8 - Heater

Plug - Base
Shell*Maximum Ratings and Typical Operating Conditions for the
7B8 are the same as those for Type 6A8*[□] Nominal voltage = 7.0 volts.^{□□} Nominal current = 0.320 ampere.

7C5



7C5

BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3[□] ac or dc volts
 Current 0.45^{□□} amp

Direct Interelectrode Capacitances (Approx.):[○]

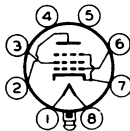
Grid No.1 to Plate 0.4 μf
 Input 9.5 μf
 Output 9.0 μf

[○] With no external shield.

Mechanical:

Mounting Position Any
 Maximum Overall Length 3-5/32"
 Maximum Seated Length 2-5/8"
 Maximum Diameter 1-3/16"
 Bulb T-9
 Base Lock-in 8-Pin
 Basing Designation for BOTTOM VIEW 6AA

Pin 1 - Heater
 Pin 2 - Plate
 Pin 3 - Grid No.2
 Pin 4 - No
 Connection
 Pin 5 - No
 Connection



Pin 6 - Grid No.1
 Pin 7 - Cathode,
 Grid No.3
 Pin 8 - Heater
 Plug - Base
 Shell

Maximum Ratings and Typical Operating Conditions for the 7C5 are the same as those for Type 6V6

- Nominal voltage = 7.0 volts.
 □□ Nominal current = 0.48 ampere.

JUNE 20, 1947

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7C6



7C6

DUPLEX-DIODE HIGH-MU TRIODE

Heater*	Coated Unipotential Cathode	
Voltage	6.3 $\square$	a-c or d-c volts
Current	0.15 $\square\square$	amp.
Direct Interelectrode Capacitances - Triode Unit: ⁰		
Grid to Plate	1.4	μpf
Grid to Cathode	2.4	μpf
Plate to Cathode	3.0	μpf
Maximum Overall Length		2-25/32"
Maximum Seated Height		2-1/4" ←
Maximum Diameter		1-3/16"
Bulb		T-9
Base		Lock-in 8-Pin
Pin 1 - Heater		Pin 6 - Diode Plate #1
Pin 2 - Triode Plate		Pin 7 - Cathode
Pin 3 - Triode Grid		Pin 8 - Heater
Pin 4 - Cathode		Plug - Base Shell
Pin 5 - Diode Plate #2		
Mounting Position	BOTTOM VIEW (8W)	
		Any

TRIODE UNIT

Plate Voltage	250 max.	volts
Characteristics - Class A ₁ Amplifier:		
Heater	6.3	volts
Plate	250	volts
Grid	-1	volt
Amp. Fact.	100	
Plate Res.	0.1	megohm
Transcond.	1000	μmhos
Plate Cur.	1.3	ma.
Typical Operation—Resistance-Coupled Amplifier:		
Plate Supply	250	volts
Load Resistance	0.25	megohm
Grid Resistor	10	megohms

DIODE UNITS - Two

Consideration of these units is given under Type 85. Circuits will be similar to those shown for the 55 with fixed bias. Diode biasing of the triode unit of the 7C6 is not suitable. ←
 Diode curves under Type 6B7 apply to the 7C6.

$\square$ Nominal voltage = 7.0 volts.

$\square\square$ Nominal current = 0.16 ampere.

* In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

⁰ Values are approximate.

← Indicates a change.

April 15, 1940

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

7C7



7C7

TRIPLE-GRID DETECTOR AMPLIFIER

Heater [■]	Coated Unipotential Cathode	
Voltage	6.3 [□]	a-c or d-c volts
Current	0.15 ^{□□}	amp.
Direct Interelectrode Capacitances: [○]		
Grid to Plate	0.007 max.	μf
Input	5.5	μf
Output	6.5	μf
Maximum Overall Length		2-25/32"
Maximum Seated Height		2-1/4"
Maximum Diameter		1-3/16"
Bulb		T-9
Base		Lock-in 8-Pin
Pin 1 - Heater		Pin 6 - Grid
Pin 2 - Plate		Pin 7 - Cathode
Pin 3 - Screen		Pin 8 - Heater
Pin 4 - Suppressor		Plug - Base Shell
Pin 5 - Internal Shield		



Mounting Position BOTTOM VIEW (8V) Any

AMPLIFIER

Plate Voltage	300 max. volts
Screen Voltage	100 max. volts
Screen Supply Voltage	300 max. volts
Grid Voltage	0 min. volts
Plate Dissipation	1.0 max. watt
Screen Dissipation	0.1 max. watt
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>	
Plate	100 250 volts
Screen	100 100 volts
Grid	-3 -3 volts
Suppressor	Connected to cathode at socket
Internal Shield	Connected to cathode at socket
Plate Res. (approx.)	1.2 2 megohms
Transconductance	1225 1300 μmhos
Plate Cur.	1.8 2 ma.
Screen Cur.	0.4 0.5 ma.

■ In circuits where the cathode is not directly connected to the heater the potential difference between heater and cathode should be kept as low as possible.

□ Nominal voltage = 7 volts.

□□ Nominal current = 0.16 ampere.

○ with close-fitting shell connected to cathode.

May 15, 1940

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



7E6

TWIN DIODE—MEDIUM-MU TRIODE

7E6

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage 6.3[□] ac or dc voltsCurrent 0.3^{□□} amp

Direct Interelectrode Capacitances:*

Triode Unit:

Grid to Plate 1.5 . . . μf

Grid to Cathode 3.0 . . . μf

Plate to Cathode 2.4 . . . μf

Diode-No.1 Plate to Grid. 0.01 max. μf

Diode-No.2 Plate to Grid. 0.04 max. μf

* With external shield connected to cathode.

Mechanical:

Mounting Position Any

Maximum Overall Length. 2-25/32"

Maximum Seated Length 2-1/4"

Maximum Diameter. 1-3/16"

Bulb. T-9

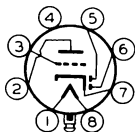
Base. Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8W

Pin 1—Heater

Pin 2—Triode Plate

Pin 3—Triode Grid

Pin 4—Internal
Connection
—Do Not UsePin 5—Diode-No.2
Plate

Pin 6—Diode-No.1

Plate

Pin 7—Cathode

Pin 8—Heater

Plug—Base
ShellTRIODE UNIT
AMPLIFIER—Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE 300 max. volts

PLATE DISSIPATION 2.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

Plate Voltage 100 250 . . volts

Cathode-Bias Resistor 770 950 . . ohms

Amplification Factor. 16.5 16

Plate Resistance 11000 8500 . . ohms

(continued on next page)

□ Nominal Voltage = 7.0 volts.

□□ Nominal Current = 0.32 ampere.

←Indicates a change.

SEPT. 30, 1948

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

7E6



7E6

TWIN DIODE—MEDIUM-MU TRIODE

Transconductance.	1500	1900	..	μ hos
Plate Current	3.9	9.5	..	ma

Maximum Circuit Values (for maximum circuit conditions):

Grid-No.1—Circuit Resistance.	1 max.	megohm
---------------------------------------	--------	--------

DIODE UNITS—Two**Maximum Ratings, Design-Center Values:**

PLATE CURRENT (Each Diode).	1 max.	ma
-------------------------------------	--------	----

SEPT. 30, 1948

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7E7

TWIN DIODE—REMOTE-CUTOFF PENTODE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3[□] ac or dc voltsCurrent. 0.3^{□□} ampDirect Interelectrode Capacitances:[○]

Pentode Unit:

Grid No.1 to Plate 0.005 max. $\mu\mu\text{f}$ Input. 4.6 $\mu\mu\text{f}$ Output 5.5 $\mu\mu\text{f}$ Diode-No.1 Plate to Grid No.1 0.013 max. $\mu\mu\text{f}$ Diode-No.2 Plate to Grid No.1 0.003 max. $\mu\mu\text{f}$ [○] with external shield connected to cathode.**Mechanical:**

Mounting Position. Any

Maximum Overall Length 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-In 8 Pin

Basing Designation for BOTTOM VIEW 8AE

Pin 1—Heater

Pin 2—Pentode
PlatePin 3—Diode-No.2
PlatePin 4—Diode-No.1
PlatePin 5—Pentode
Grid No.2

Pin 6—Pentode

Grid No.1

Pin 7—Cathode,
Pentode

Grid No.3

Pin 8—Heater

Plug—Base

Shell

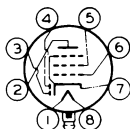
PENTODE * UNIT
AMPLIFIER—Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 100 max. volts

GRID-No.2 SUPPLY VOLTAGE 300 max. volts

PLATE DISSIPATION. 2 max. watts

GRID-No.2 DISSIPATION. 0.3 max. watt

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value 0 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

(continued on next page)

[□] Nominal voltage = 7.0 volts.^{□□} Nominal current = 0.32 ampere.

◀—Indicates a change.

SEPT. 30, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

7E7



7E7

TWIN DIODE—REMOTE-CUTOFF PENTODE

Typical Operation and Characteristics:

Plate Voltage.	100	250	..	volts
Grid-No.2 Voltage.	100	100	..	volts
Cathode-Bias Resistor.	80	330	..	ohms
Plate Resistance (Approx.)	0.15	0.7	..	megohm
Transconductance	1600	1300	..	μ mhos
Grid-No.1 Bias (Approx.) for transconductance of 2 μ mhos	-36	-42.5	..	volts
Plate Current.	10	7.5	..	ma
Grid-No.2 Current.	2.7	1.6	..	ma

DIODE UNITS - Two

Maximum Ratings, Design-Center Values:

PLATE CURRENT (For Each Diode)	1 max.	ma
--	--------	----

SEPT. 30, 1948

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



7F7

HIGH-MU TWIN TRIODE

7F7

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathodes:

Voltage 6.3[□] ac or dc voltsCurrent 0.3^{□□} amp ←

Direct Interelectrode Capacitances:*

Each Unit:

Grid to Plate 1.6 $\mu\mu\text{f}$ Grid to Cathode 2.4 $\mu\mu\text{f}$ Plate to Cathode 2.0 $\mu\mu\text{f}$ Grid to Grid 0.2 max. $\mu\mu\text{f}$ Plate to Plate 1.0 max. $\mu\mu\text{f}$

* With external shield connected to cathode.

Mechanical:

Mounting Position Any

Maximum Overall Length 2-25/32"

Maximum Seated Length 2-1/4"

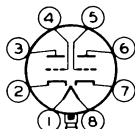
Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8AC

Pin 1-Heater

Pin 2-Cathode of
Unit No.2Pin 3-Plate of
Unit No.2Pin 4-Grid of
Unit No.2Pin 5-Grid of
Unit No.1Pin 6-Plate of
Unit No.1Pin 7-Cathode of
Unit No.1

Pin 8-Heater

Plug - Base
ShellAMPLIFIER - Class A₁*Values are for each unit***Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE 300 max. volts ←

PLATE DISSIPATION 1.0 max. watt

GRID VOLTAGE:

Positive bias value 0 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts ←

Heater positive with respect to cathode 90 max. volts ←

Characteristics:

Plate Voltage 100 250 volts

Grid Voltage -1 -2 volts

Amplification Factor 70 70

Plate Resistance (Approx.) 62000 44000 ohms

Transconductance 1125 1600 μmhos

Plate Current 0.65 2.3 ma

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.32 ampere.

← Indicates a change.

DEC. 30, 1947

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY.



7F8

7F8

MEDIUM-MU TWIN TRIODE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathodes:

Voltage. 6.3[□] ac or dc voltsCurrent. 0.3^{□□} amp

Direct Interelectrode Capacitances:

Each Unit:

Grid to Plate. 1.2* μf Grid to Cathode. 2.8* μf Plate to Cathode. 1.4* μf Heater to Cathode. 2.8** μf Grid to Grid. 0.1 max.* μf Plate to Plate. 0.5 max.* μf

* With external shield connected to cathode.

** With external shield connected to ground.

Mechanical:

Mounting Position. Any

Maximum Overall Length. 2-9/32"

Maximum Seated Length. 1-3/4"

Maximum Diameter. 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW. 8BW

Pin 1—Grid of
Unit No.2

Pin 2—Heater

Pin 3—Plate of
Unit No.2Pin 4—Cathode of
Unit No.2Pin 5—Cathode of
Unit No.1Pin 6—Plate of
Unit No.1

Pin 7—Heater

Pin 8—Grid of
Unit No.1Plug — Base
ShellAMPLIFIER—Class A₁*Values are for each unit***Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 300 max. volts

PLATE DISSIPATION (Total for both units) 3.5 max. watts

GRID VOLTAGE:

Positive bias value. 0 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Characteristics:

Plate Voltage. 250 . . volts

Cathode-Bias Resistor. 500 . . ohms

Amplification Factor. 48

□ Nominal voltage = 7.0 volts. □□ Nominal current = 0.32 ampere.

DEC. 30, 1947

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

7F8



7F8

MEDIUM-MU TWIN TRIODE

Plate Resistance (Approx.)	14500	..	ohms
Transconductance	3300	..	μ hos
Plate Current	6	..	ma
Grid Bias for plate current of 10 μ a (Approx.)	-11	..	volts

Maximum Circuit Values (for maximum rated conditions):

Grid-Circuit Resistance:

For cathode-bias operation 0.5 max. megohm

DEC. 30, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7G7

SHARP-CUTOFF PENTODE

7G7

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3[□] ac or dc voltsCurrent. 0.45^{□□} ampDirect Interelectrode Capacitances:[○]Grid No.1 to Plate . . . 0.007 max. $\mu\mu\text{f}$ Input. 9 $\mu\mu\text{f}$ Output 7 $\mu\mu\text{f}$ [○] With external shield connected to cathode.**Mechanical:**

Mounting Position. Any

Maximum Overall Length 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

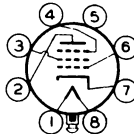
Basing Designation for BOTTOM VIEW 8V

Pin 1 - Heater

Pin 2 - Plate

Pin 3 - Grid No.2

Pin 4 - Grid No.3

Pin 5 - Internal
Shield

Pin 6 - Grid No.1

Pin 7 - Cathode

Pin 8 - Heater

Plug - Base
ShellAMPLIFIER - Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 300 max. volts ←

GRID-No.2 (SCREEN) VOLTAGE 100 max. volts ←

GRID-No.2 SUPPLY VOLTAGE 300 max. volts ←

PLATE DISSIPATION. 1.5 max. watts ←

GRID-No.2 DISSIPATION. 0.3 max. watt ←

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . . . 90 max. volts ←

Heater positive with respect to cathode . . . 90 max. volts ←

Typical Operation and Characteristics:

Plate Voltage. 250 . . . volts

Grid No.3 Connected to cathode at socket

Internal Shield Connected to cathode at socket

Grid-No.2 Voltage. 100 . . . volts

Grid-No.1 Voltage. -2 . . . volts

Cathode-Bias Resistor. 250 . . . ohms

Plate Resistance (Approx.) 0.8 . . . megohm

Transconductance 4500 . . . μmhos

(continued on next page)

[□] Nominal voltage = 7.0 volts.^{□□} Nominal current = 0.48 ampere.

← Indicates a change.

DEC. 30, 1947

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

7G7



7G7

SHARP-CUTOFF PENTODE

→ Grid-No.1 Bias (Approx.) for
Cathode Current Cutoff -7 . . volts
Plate Current. 6 . . ma
Grid-No.2 Current. 2 . . ma

→ Indicates a change.

DEC. 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7H7

7H7

REMOTE-CUTOFF PENTODE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3[□] ac or dc voltsCurrent. 0.3^{□□} ampDirect Interelectrode Capacitances:⁰Grid No.1 to Plate. 0.007 max. μf Input. 8 μf Output. 7 μf ⁰ With external shield connected to cathode.**Mechanical:**

Mounting Position. Any

Maximum Overall Length. 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter. 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW. 8V

Pin 1 - Heater

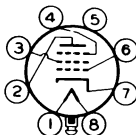
Pin 2 - Plate

Pin 3 - Grid No.2

Pin 4 - Grid No.3

Pin 5 - Internal

Shield



Pin 6 - Grid No.1

Pin 7 - Cathode

Pin 8 - Heater

Plug - Base

Shell

AMPLIFIER - Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE. 150 max. volts

GRID-No.2 SUPPLY VOLTAGE. 300 max. volts

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value. 0 max. volts

PLATE DISSIPATION. 2.5 max. watts

GRID-No.2 DISSIPATION. 0.5 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

Typical Operation and Characteristics:

Plate Voltage. 100 250 volts

Grid No.3 Connected to cathode at socket

Internal Shield Connected to cathode at socket

Grid-No.2 Voltage. 100 150 volts

Grid-No.1 Voltage. -1 - volt

Cathode-Bias Resistor. 80 180 ohms

(continued on next page)

[□] Nominal voltage = 7.0 volts.^{□□} Nominal current = 0.32 ampere.

← Indicates a change.

DEC. 30, 1947

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

7H7



7H7

REMOTE-CUTOFF PENTODE

Plate Resistance (Approx.)	0.25	0.8 megohm
Transconductance	4800	4200 μ hos
Grid-No.1 Bias (Approx.) for transconductance of 35 μ hos . . .	-12	-19 volts
Plate Current.	8.2	10 ma
Grid-No.2 Current.	3.3	3.2 ma

DEC. 30, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7J7

TRIODE-HEPTODE CONVERTER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3⁰ ac or dc voltsCurrent. 0.3⁰⁰ ampDirect Interelectrode Capacitances:⁰Heptode Grid No.1 to Heptode Plate 0.03 max. μf Heptode Grid No.1 to Triode Plate. 0.1 max. μf

Heptode Grid No.1 to Triode Grid &

Heptode Grid No.3. 0.3 max. μf

Triode Grid & Heptode Grid No.3 to

Triode Plate 0.9 . . μf

Heptode Grid No.1 to All Other

Electrodes (RF Input). 4.6 . . μf

Heptode Plate to All Other

Electrodes (Mixer Output) 3.2 . . μf

Triode Grid & Heptode Grid No.3 to All

Other Electrodes Except Triode

Plate (Oscillator Input) 7.5 . . μf

Triode Plate to All Other Electrodes

Except Triode Grid & Heptode

Grid No.3 (Oscillator Output). 7.5 . . μf ⁰ With external shield connected to cathode.

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8BL

Pin 1 - Heater

Pin 2 - Heptode Plate

Pin 3 - Triode Plate

Pin 4 - Triode Grid,

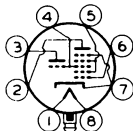
Heptode

Grid No.3

Pin 5 - Heptode

Grids No.2

& No.4



Pin 6 - Heptode

Grid No.1

Pin 7 - Cathode,

Heptode

Grid No.5,

Internal

Shield

Pin 8 - Heater

Plug - Base Shell

CONVERTER

Maximum Ratings, Design-Center Values:

HEPTODE PLATE VOLTAGE. 300 max. volts

HEPTODE GRIDS-No.2 & No.4

(SCREEN) VOLTAGE 100 max. volts

⁰ Nominal voltage = 7.0 volts.⁰⁰ Nominal current = 0.32 ampere.

← Indicates a change.

DEC. 30, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

7J7



7J7

TRIODE-HEPTODE CONVERTER

HEPTODE GRIDS-No.2 & No.4			
SUPPLY VOLTAGE	300 max.	volts	
HEPTODE GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Positive bias value.	0 max.	volts	
HEPTODE PLATE DISSIPATION.	0.5 max.	watt	
HEPTODE GRIDS-No.2 & No.4 DISSIPATION. . .	0.3 max.	watt	
TRIODE PLATE VOLTAGE	150 max.	volts	
TRIODE PLATE-SUPPLY VOLTAGE.	300 max.	volts	
TRIODE PLATE DISSIPATION	1.25 max.	watts	
TOTAL CATHODE CURRENT.	14 max.	ma	
→ PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode. .	90 max.	volts	
Heater positive with respect to cathode. .	90 max.	volts	
→ Typical Operation:			
Heptode Plate Voltage.	100	250	volts
Heptode Grids-No.2 & No.4 Voltage. . .	100	100	volts
Heptode Grid-No.1 Voltage.	-3	-3	volts
Triode (Oscillator) Plate-Supply Volt.	100	250†	volts
Triode Grid & Heptode			
Grid-No.3 Resistor	50000	50000	ohms
Heptode Plate Resistance	0.5	1.5	megohms
Heptode Plate Current.	1.5	1.4	ma
Heptode Grids-No.2 & No.4 Current. . .	2.6	2.8	ma
Triode Plate Current	3.2	5	ma
Triode Grid & Heptode			
Grid-No.3 Current.	0.3	0.4	ma
Conversion Conductance	280	290	μmhos
Conversion Conductance (Approx.) for			
heptode grid-No.1 bias of -20 volts .	2	2	μmhos
Total Cathode Current.	7.7	9.6	ma
† Applied through a 20000-ohm dropping resistor, properly bypassed.			
NOTE: The transconductance of the triode section, not oscillating, is approximately 1400 μmhos under the following conditions: triode plate voltage = 150; triode-grid & heptode grid-No.3 volts = -3. Under the same conditions, triode plate current is 6.6 ma., triode plate resistance is 10700 ohms, and amplification factor is 15.			
→ Indicates a change.			

DEC. 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7K7

TWIN DIODE—HIGH-MU TRIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage. 6.3⁰ ac or dc volts
Current. 0.3⁰⁰ amp

Mechanical:

Mounting Position. Any
Maximum Overall Length. 2-25/32"
Maximum Seated Length. 2-1/4"
Maximum Diameter. 1-3/16"
Bulb T-9
Base Lock-in 8-Pin
Basing Designation for BOTTOM VIEW 8BF

Pin 1-Heater

Pin 2-Triode

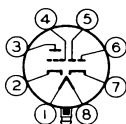
Cathode

Pin 3-Triode Plate

Pin 4-Triode Grid

Pin 5-Diode-No.2

Plate



Pin 6-Diode-No.1

Plate

Pin 7-Cathode of
Diode-No.1 &
Diode-No.2

Pin 8-Heater

Plug - Base Shell

TRIODE UNIT AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 250 max. volts

Typical Operation and Characteristics:

Plate Voltage. 250 volts
Grid Voltage -2 volts
Amplification Factor 70
Plate Resistance 44000 ohms
Transconductance 1600 μ hos
Plate Current. 2.3 ma

DIODE UNITS - Two

The two diode units have a common cathode and are independent of the triode unit. Further consideration of the diode units including diode curves is given at the front of this Section.

⁰Nominal voltage = 7.0 volts

⁰⁰Nominal current = 0.32 amperes.

MAY 20, 1949

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



PENTAGRID CONVERTER

Heater	Coated Unipotential Cathode	
Voltage	6.3 [□]	a-c or d-c volts
Current	0.3 ^{□□}	amp.
Direct Interelectrode Capacitances: [○]		
Grid #3 to All Other Electrodes & Base Shell (R-F Input)	9.0	μf
Plate to All Other Electrodes & Base Shell (Mixer Output)	9.0	μf
Grid #1 to All Other Electrodes & Base Shell	7.0	μf
Grid #3 to Plate	0.20 max.	μf
Grid #1 to Grid #3	0.20 max.	μf
Grid #1 to Plate	0.15 max.	μf
Grid #1 to All Other Electrodes & Base Shell Except Cathode	5.0	μf
Grid #1 to Cathode	2.2	μf
Cathode to All Other Electrodes & Base Shell Except Grid #1	6.0	μf
Maximum Overall Length	2-25/32"	
Maximum Seated Height	2-1/4"	
Maximum Diameter	1-3/16"	
Bulb	T-9	
Base	Lock-in 8-Pin	
Pin 1-Heater	Pin 6-Grid #3	
Pin 2-Plate	Pin 7-Cathode	
Pin 3-Grids #2 & #4	Pin 8-Heater	
Pin 4-Grid #1	Plug -Base Shell	
Pin 5-Grid #5		
Mounting Position	BOTTOM VIEW (8AL)	Any
<u>CONVERTER SERVICE</u>		
Plate Voltage	300 max.	volts
Grids #2 & #4 Voltage	100 max.	volts
Grids #2 & #4 Supply Voltage	300 max.	volts
Grid #3 Voltage	0 min.	volts
Plate & Grids #2 & #4 Dissipation (total)	2.0 max.	watts
Grids #2 & #4 Dissipation	1.0 max.	watt
Total Cathode Current	14 max.	ma.
Characteristics with Separate Excitation: [*]		
Plate Voltage	100	250 volts
Grids #2 & #4 Voltage	100	100 volts
Grid #3 (Control) Voltage	-2	-2 volts
Grid #5 Voltage	0	0 volts
Grid #1 Resistor	20000	20000 ohms
Plate Resistance	0.5	1 approx. megohm
Conversion Transcond.	.525	550 μmhos
Conversion Transcond. with Grid #3 Bias of -35 volts	2	2 approx. μmhos
Plate Current	3.3	3.5 ma.
Grids #2 & #4 Current	8.5	8.5 ma.
Grid #1 Current	0.5	0.5 ma.
Total Cathode Current	12.3	12.5 ma.

See next page.

May 1, 1941

RCA RADITRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

7Q7



7Q7

PENTAGRID CONVERTER

(continued from preceding page)

NOTE: The transconductance between Grid #1 and Grids #2 & #4 connected to plate (not oscillating) is approximately 4500 μ hos under the following conditions: Grids #1, #3, and #5 at 0 volts; Grids #2 & #4 and plate at 100 volts.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- Nominal voltage = 7.0 volts.
- Nominal current = 0.32 ampere.
- With shield-can connected to cathode.
- ✱ With self-excited oscillator.
- ✱ These characteristics correspond very closely to those obtained with zero bias in a self-excited oscillator circuit.

A typical self-excited converter circuit is shown under type 6SA7.

May 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



7V7

SHARP-CUTOFF PENTODE

7V7

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3[□] ac or dc voltsCurrent. 0.45^{□□} ampDirect Interelectrode Capacitances:[○]Grid No.1 to Plate 0.004 max. μf Input. 9.5 μf Output 6.5 μf [○] with external shield connected to cathode.

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8V

Pin 1 - Heater

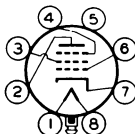
Pin 2 - Plate

Pin 3 - Grid No.2

Pin 4 - Grid No.3

Pin 5 - Internal

Shield



Pin 6 - Grid No.1

Pin 7 - Cathode

Pin 8 - Heater

Plug - Base
ShellAMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 150 max. volts

GRID-No.2 SUPPLY VOLTAGE 300 max. volts

PLATE DISSIPATION. 4 max. watts

GRID-No.2 DISSIPATION. 0.8 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

	Condition I*	Condition II**
Plate Voltage.	300	300 . . volts
Grid No.3 (Suppressor)	Connected to cathode at socket	
Internal Shield. . . .	Connected to cathode at socket	
Grid-No.2 Supply -		
Voltage*	150	300 . . volts
Grid-No.2 Resistor . .	-	40000 . . ohms
Min. Cathode-Bias		
Resistor.	160	160 . . ohms

[□] Nominal voltage = 7.0 volts.^{□□} Nominal current = 0.48 ampere.

*, **, *: See next page.

JUNE 15, 1948

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

7V7
7W7



7V7

SHARP-CUTOFF PENTODE

Plate Current.	10	10	ma
Grid-No.2 Current. . .	3.9	3.9	ma
Plate Resistance . . .	0.3	0.3	megohm
Transconductance . . .	5800	5800	μ mos
Grid-No.1 Bias (Approx.)			
for plate current of			
10 μ a.	-8	-16	volts
* Condition I with fixed grid-No.2 supply gives a sharp-cutoff characteristic.			
** Condition II with series grid-No.2 resistor gives an extended-cutoff characteristic.			
# When grid-No.2 supply voltage in excess of 150 volts is used, a series grid-No.2 resistor must be used to limit grid-No.2 voltage to 150 volts when the plate current is at its normal value of 10 ma.			

7W7

SHARP-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3[□] ac or dc volts

Current. 0.45^{□□} amp

Direct Interelectrode Capacitances:[○]

Grid No.1 to Plate . . 0.0025 max. μ f

Input. 9.5 μ f

Output 7 μ f

[○] With external shield connected to cathode.

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8BJ

Pin 1-Heater

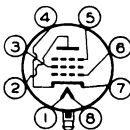
Pin 2-Plate

Pin 3-Grid No.2

Pin 4-Cathode

Pin 5-Grid No.3,

Internal
Shield



Pin 6-Grid No.1

Pin 7-Cathode

Pin 8-Heater

Plug - Base
Shell

Maximum Ratings, Typical Operation, and Characteristics are the same as for Type 7V7

[□] Nominal voltage = 7.0 volts.

^{□□} Nominal current = 0.48 ampere.

JUNE 15, 1948

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7X7

DOUBLE DIODE—HIGH-MU TRIODE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathodes:

Voltage. 6.3[□] ac or dc voltsCurrent. 0.3^{□□} amp**Mechanical:**

Mounting Position. Any

Maximum Overall Length. 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter. 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8BZ

Pin 1 - Heater

Pin 2 - Triode Plate

Pin 3 - Triode Grid

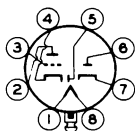
Pin 4 - Cathode

(Triode &

Diode No.1)

Internal

Shield



Pin 5 - Diode Plate

No.1

Pin 6 - Diode Plate

No.2

Pin 7 - Cathode

(Diode No.2)

Pin 8 - Heater

Plug - Base Shell

TRIODE UNIT
AMPLIFIER - Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 300 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

Plate Voltage. 100 250 . . volts

Grid Voltage 0 -1 . . volt

Amplification Factor 85 100

Plate Resistance 85000 67000 . . ohms

Transconductance 1000 1500 . . μ mhos

Plate Current 1.2 1.9 . . ma

DIODE UNITS - Two

The 7X7 differs from the usual twin-diode-triode in that diode No.2 has its own cathode, separate from that used for the triode and diode No.1.

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.32 ampere.

MAR. 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7Y4

FULL-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3^{sq} ac or dc voltsCurrent. 0.5^{sq} amp

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 5AB

Pin 1 - Heater

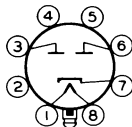
Pin 2 - No

Connection

Pin 3 - Plate No.2

Pin 4 - No

Connection



Pin 5 - No

Connection

Pin 6 - Plate No.1

Pin 7 - Cathode

Pin 8 - Heater

Plug - Base Shell

FULL-WAVE RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE 1250 max. volts

PEAK PLATE CURRENT PER PLATE 180 max. ma

DC OUTPUT CURRENT. 70 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 450 max. volts

Heater positive with respect to cathode 450 max. volts

Typical Operation:

	Capacitor- Input to Filter	Choke- Input to Filter
AC Plate-to-Plate Supply		
Voltage (RMS) . .	650	900 . . volts
Filter-Input Capacitor	4	- . . μ f
Min. Total Effective Plate- Supply Impedance per Plate*	150	- . . ohms
Min. Filter-Input Choke. . . .	-	10 . . henries
DC Output Current.	70	70 . . ma
DC Output Voltage at Input to Filter (Approx.):		
At half-load (35 ma.)	390	385 . . volts
At full-load (70 ma.)	355	375 . . volts
Voltage Regulation (Approx.):		
Half-load to full load current	35	10 . . volts

* Indicated value for conditions shown will limit peak plate current to maximum rated value. When a filter-input capacitor larger than 4 μ f is used, it may be necessary to use more plate-supply impedance than the value shown to limit the peak plate current to the rated value.

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.53 ampere.

◀ Indicates a change.

DEC. 30, 1947

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

724



724

FULL-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3^a ac or dc voltsCurrent. 0.9^{aa} amp

Mechanical:

Mounting Position. Any

Maximum Overall Length. 3-5/32"

Maximum Seated Length. 2-5/8"

Maximum Diameter. 1-3/16"

Bulb T-9

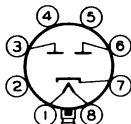
Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 5AB

Pin 1-Heater

Pin 2-No
Connection

Pin 3-Plate No.2

Pin 4-No
Connection

Pin 5-No

Connection

Pin 6-Plate No.1

Pin 7-Cathode

Pin 8-Heater

Plug -Base Shell

FULL-WAVE RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE 1250 max. volts

PEAK PLATE CURRENT PER PLATE 300 max. ma

DC OUTPUT CURRENT. 100 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 450 max. volts

Heater positive with respect to cathode. 450 max. volts

Typical Operation:

	Capacitor- Input to Filter	Choke- Input to Filter	
AC Plate-to-Plate Supply Voltage (RMS) . .	650	900	volts
Min. Total Effective Plate- Supply Impedance per Plate*	75	-	ohms
Min. Filter-Input Choke. . . .	-	6	henries
DC Output Current.	100	100	ma
DC Output Voltage at Input to Filter (Approx.):			
At half-load (50 ma.)	400	365	volts
At full-load (100 ma.)	365	350	volts
Voltage Regulation (Approx.):			
Half-load to full load current	35	15	volts

* When a filter-input capacitor larger than 40 μ f is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.96 ampere.

DEC. 30, 1947

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



12A8-GT

12A8-GT

PENTAGRID CONVERTER

The 12A8-GT is the same as the 6A8-GT except for the following items:

Heater, for Unipotential Cathode:

Voltage.	12.6		ac or dc volts
Current.	0.15		amp



12AB5

12AB5

BEAM POWER TUBE

9-PIN MINIATURE TYPE

For use in automobile radio receivers
operating from 12-volt storage batteries

GENERAL DATA**Electrical:**Heater[•], for Unipotential Cathode:

Voltage range. 10.0 to 15.9 dc volts

This voltage range is on an absolute basis. For longest life, it is recommended that the heater be operated within the voltage range of 11 to 14 volts.

Current (Approx.),

at 12.6 volts. 0.2 amp

Direct Interelectrode Capacitances:⁰Grid No.1 to plate 0.7 max. μf Grid No.1 to cathode & grid No.3,
grid No.2, and heater. 8 μf Plate to cathode & grid No.3,
grid No.2, and heater. 8.5 μf **Mechanical:**

Mounting Position. Any

Maximum Overall Length 2-5/8"

Maximum Seated Length. 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip). . . 2" $\pm$ 3/32"

Maximum Diameter 7/8"

Dimensional Outline. See General Section

Bulb T-6-1/2

Base Small-Button Noval 9-Pin (JETEC No.E9-1)

Basing Designation for BOTTOM VIEW 9EU

Pin 1 - Grid No.2
Pin 2 - No Connection

Pin 3 - Grid No.1
Pin 4 - Heater
Pin 5 - Heater



Pin 6 - Grid No.1
Pin 7 - Cathode,
Grid No.3
Pin 8 - Grid No.2
Pin 9 - Plate

AF POWER AMPLIFIER - Class A₁**Maximum Ratings, Design-Center Values:**

For application of these design-center ratings to storage-battery operation, see Operating Considerations

PLATE VOLTAGE. 315 max. volts

GRID-No.2 (SCREEN) VOLTAGE 285 max. volts

PLATE DISSIPATION. 12 max. watts

GRID-No.2 INPUT. 2 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . . 90 max. volts

Heater positive with respect to cathode. . . 90 max. volts

BULB TEMPERATURE (At hottest point

on bulb surface) 250 max. °C

• °: see next page.

SEPT. 1, 1955

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

12AB5



12AB5

BEAM POWER TUBE

Characteristics with 12.6 volts on heater:

Plate Voltage.	250	250	volts
Grid-No.2 Voltage.	200	250	volts
Grid-No.1 (Control-Grid) Voltage	-	-12.5	volts
Cathode-Bias Resistor.	270	-	ohms
Peak AF Grid-No.1 Voltage.	10.5	12.5	volts
Zero-Signal Plate Current.	33.5	45	ma
Max.-Signal Plate Current.	36	47	ma
Zero-Signal Grid-No.2 Current (Approx.)	1.6	4.5	ma
Max.-Signal Grid-No.2 Current (Approx.)	3.2	7	ma
Plate Resistance (Approx.)	75000	50000	ohms
Transconductance	4000	4100	μ mhos
Load Resistance.	6000	5000	ohms
Total Harmonic Distortion.	8	8	%
Max.-Signal Power Output	3.3	4.5	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

PUSH-PULL AF POWER AMPLIFIER - Class AB₁**Maximum Ratings, Design-Center Values:**

For application of these design-center ratings to storage-battery operation, see Operating Considerations

PLATE VOLTAGE.	315 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	285 max.	volts
PLATE DISSIPATION.	12 max.	watts
GRID-No.2 INPUT.	2 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)	250 max.	°C

Characteristics with 12.6 volts on heater:*Values are for 2 tubes*

Plate Voltage.	250	volts
Grid-No.2 Voltage.	250	volts
Grid-No.1 (Control-Grid) Voltage	-15	volts
Peak Af Grid-No.1-to-		
Grid-No.1 Voltage	30	volts
Zero-Signal Plate Current.	70	ma
Max.-Signal Plate Current.	79	ma

- operation of heater in series with other heaters is not recommended.
- without external shield.

SEPT. 1, 1955

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



12AB5

12AB5

BEAM POWER TUBE

Zero-Signal Grid-No.2 Current (Approx.). .	5	ma
Max.-Signal Grid-No.2 Current (Approx.). .	13	ma
Effective Load Resistance (Plate to plate)	10000	ohms
Total Harmonic Distortion.	5	%
Max.-Signal Power Output	10	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

OPERATING CONSIDERATIONS

The *maximum ratings* in the tabulated data for the 12AB5 are working design-center maximums established according to the standard design-center system of rating electron tubes. Tubes so rated will give satisfactory performance in storage-battery-operated equipment provided the following stipulations are observed:

In the case of storage-battery-with-charger supply or similar supplies, the normal battery-voltage fluctuation may be as much as 35 per cent or more. This fluctuation imposes severe operating conditions on tubes. Under these conditions, the equipment should be designed so that 90 per cent of the design-center maximum values of plate voltage, grid-No.2 voltage, plate dissipation, and grid-No.2 input is never exceeded for a battery terminal potential of 13.2 volts. Although the operating voltages of the 12AB5 in this service will, at times, exceed the design-center maximum values, satisfactory performance with probable sacrifice in life will be obtained.

SEPT. 1, 1955

TUBE DIVISION

TENTATIVE DATA 2

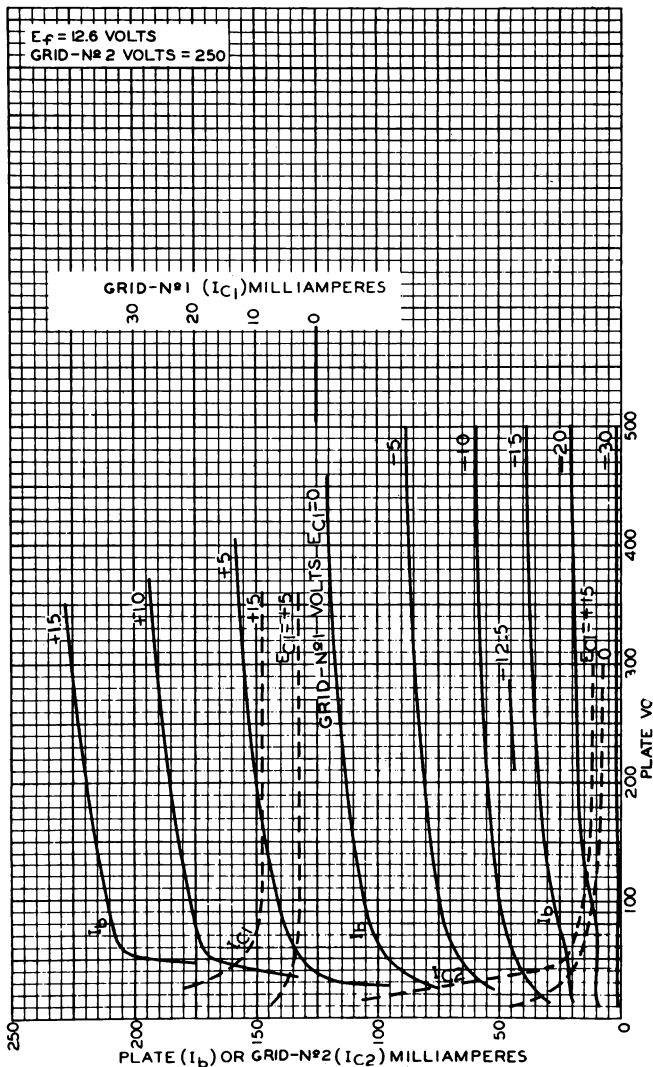
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

12AB5



12AB5

AVERAGE CHARACTERISTICS



AUGUST 18, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8754



12AB5

AVERAGE CHARACTERISTICS
TRIODE CONNECTION

12AB5



AUG. 19, 1955

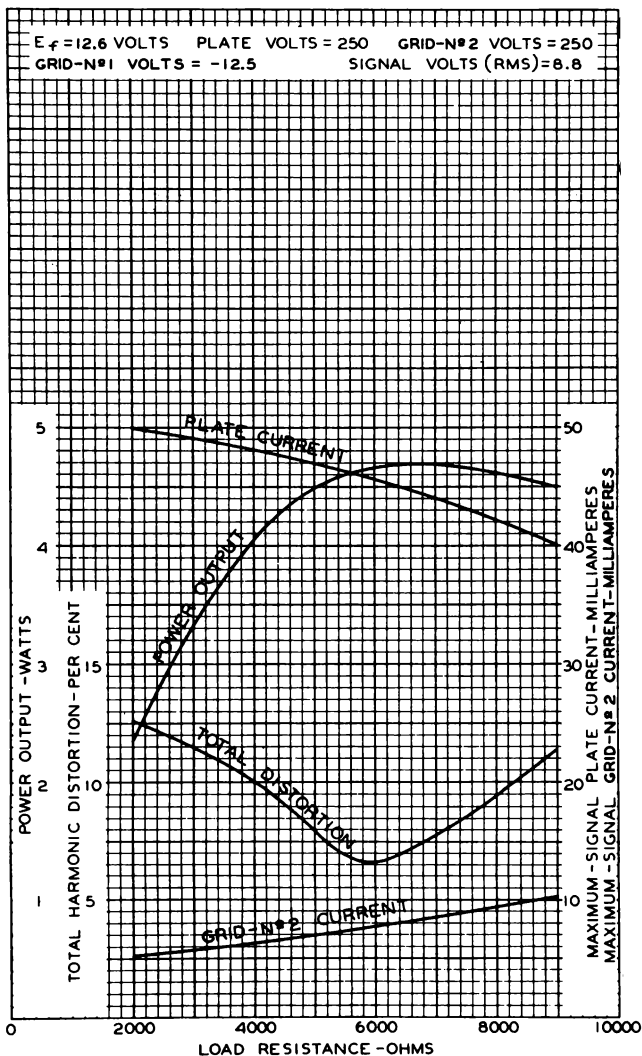
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

12AB5



12AB5

OPERATION CHARACTERISTICS



AUGUST 18, 1955

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8755



12AH7-GT

MEDIUM-MU TWIN TRIODE

12AH7-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage. 12.6 ac or dc volts

Current. 0.15 amp

Direct Interelectrode Capacitances (Approx.):⁰

	Unit No. 1	Unit No. 2	
Grid to plate.	3	2.2	μf
Grid to cathode and heater.	2.8	3.2	μf
Plate to cathode and heater.	2.6	3	μf
Plate of unit No.1 to plate of unit No.2.	0.4		μf
Grid of unit No.1 to grid of unit No.2.	0.06		μf

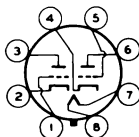
Characteristics, Class A₁ Amplifier (Each unit):

Plate Voltage.	100	180	volts
Grid Voltage.	-3.6	-6.5	volts
Amplification Factor.	16	16	
Plate Resistance (Approx.) . . .	10300	8400	ohms
Transconductance.	1550	1900	μmhos
Plate Current.	3.7	7.6	ma
Grid Voltage (Approx.) for plate current of 10 μamp	-8.5	-16	volts

Mechanical:

Mounting Position.	Any
Maximum Overall Length.	3-1/16"
Maximum Seated Length.	2-1/2"
Maximum Diameter.	1-9/32"
Dimensional Outline.	See General Section
Bulb.	T-9
Base.	Intermediate-Shell Octal 8-Pin (JETEC No. B8-6)
Basing Designation for BOTTOM VIEW.	8BE

- Pin 1 - Grid of
Unit No.2
Pin 2 - Cathode of
Unit No.2
Pin 3 - Plate of
Unit No.2
Pin 4 - Cathode of
Unit No.1



- Pin 5 - Grid of
Unit No.1
Pin 6 - Plate of
Unit No.1
Pin 7 - Heater
Pin 8 - Heater

⁰ with external shield JETEC No.308 connected to cathode of unit under test.

← Indicates a change.

SEPT. 1, 1955

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

12AH7-GT



12AH7-GT

MEDIUM-MU TWIN TRIODE

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	180 max.	volts
PLATE-SUPPLY VOLTAGE	300 max.	volts
PLATE DISSIPATION.	1.5 max.	watts

→ PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 [▲] max.	volts

▲ The dc component must not exceed 100 volts.

→ Indicates a change.

SEPT. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



12AL5

TWIN DIODE

MINIATURE TYPE

12AL5

Heater, for Unipotential Cathodes:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12AL5 is the same as the 6AL5 except for heater rating.

MAY 3, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



12AL8

MEDIUM-MU TRIODE—POWER TETRODE

9-PIN MINIATURE TYPE

*For use in automobile radio receivers operating directly
from 12-volt storage batteries*

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage. 10 to 15.9ac or dc volts

*This voltage is on an absolute basis. For longest
life, it is recommended that the heater be operated
within the voltage range of 11 to 14 volts.*

Current (Approx.) at

12.6 volts 0.55 amp

Direct Interelectrode Capacitances:^o

Triode Unit:

Grid to plate. 5.7 μmf

Grid to cathode and heater 1.8 μmf

Plate to cathode and heater. 0.4 μmf

Tetrode Unit:

Grid No.2 to plate 14 μmf

Grid No.2 to cathode, grid No.1,
and heater 13 μmf

Plate to cathode, grid No.1,
and heater 1.6 μmf

Tetrode grid No.2 to triode grid 0.01 max. μmf

Characteristics, Class A₁ Amplifier:

	Triode Unit	Tetrode Unit	
Heater Voltage	12.6	12.6	volts
Plate Voltage.	12.6	12.6	volts
Control-Grid Voltage (Developed across 2.2-megohm resistor):			
Grid	-0.9	—	volt
Grid-No.2.	—	-0.5	volt
Grid-No.1 (Space-Charge- Grid) Voltage.	—	12.6	volts
Amplification Factor:			
Grid to plate.	13	—	
Grid No.2 to plate	—	7.2	
Plate Resistance (Approx.)	13000	480	ohms
Transconductance:			
Grid to plate.	1000	—	μmhos
Grid No.2 to plate	—	15000	μmhos
Plate Current.	0.5	40	ma
Grid-No.1 Current.	—	75	ma

Mechanical:

Operating Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length. 2-3/8"

^o: See next page.

12AL8

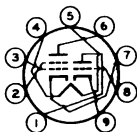


12AL8

MEDIUM-MU TRIODE-POWER TETRODE

Length, Base Seat to Bulb Top (Excluding tip) 2" $\pm$ 3/32"
 Diameter 0.750" to 0.875"
 Dimensional Outline. See General Section
 Bulb T6-1/2
 Base Small-Button Noval 9-Pin (JEDEC No.E9-1)
 Basing Designation for BOTTOM VIEW 9GS

Pin 1-Triode Plate
 Pin 2-Tetrode
 Grid No.2
 Pin 3-Tetrode
 Grid No.1
 Pin 4-Heater
 Pin 5-Heater



Pin 6-Tetrode Plate
 Pin 7-Tetrode
 Cathode
 Pin 8-Triode Grid
 Pin 9-Triode
 Cathode

AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

	Triode Unit	Tetrode Unit	
PLATE VOLTAGE.	30 max.	30 max.	volts
GRID-No.2 (CONTROL-GRID) VOLTAGE.	—	-20 max.	volts
GRID-No.1 (SPACE-CHARGE-GRID) VOLTAGE (Absolute maximum)	—	16 max.	volts
CATHODE CURRENT.	20 max.	—	ma
PEAK-HEATER-CATHODE VOLTAGE: Heater negative with respect to cathode	30 max.	30 max.	volts
Heater positive with respect to cathode	30 max.	30 max.	volts

Maximum Circuit Values:

	Triode Unit	Tetrode Unit	
Grid-No.2-Circuit Resistance	—	10 max.	megohms
Grid-Circuit Resistance.	10 max.	—	megohms

Without external shield.

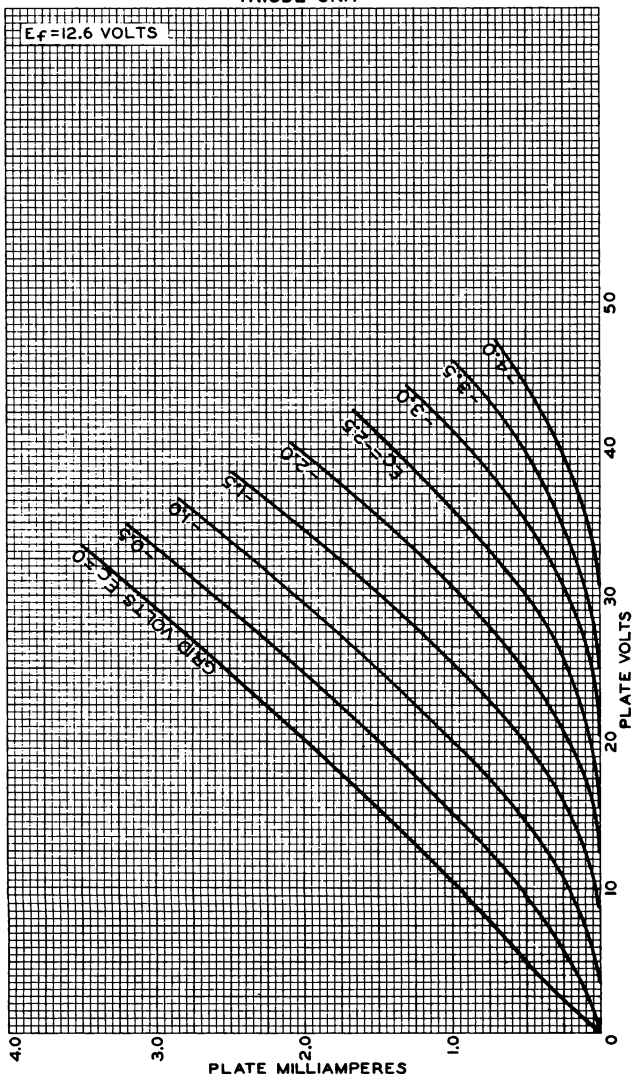
Under no circumstances should this absolute value be exceeded.



12AL8

AVERAGE PLATE CHARACTERISTICS
TRIODE UNIT

12AL8

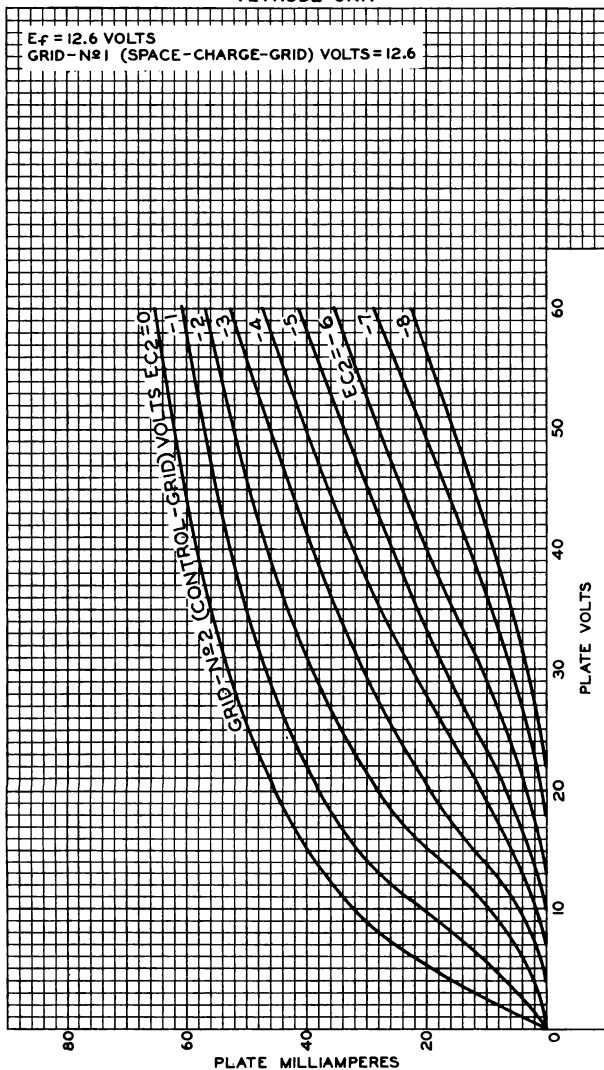


12AL8



12AL8

AVERAGE PLATE CHARACTERISTICS
TETRODE UNIT

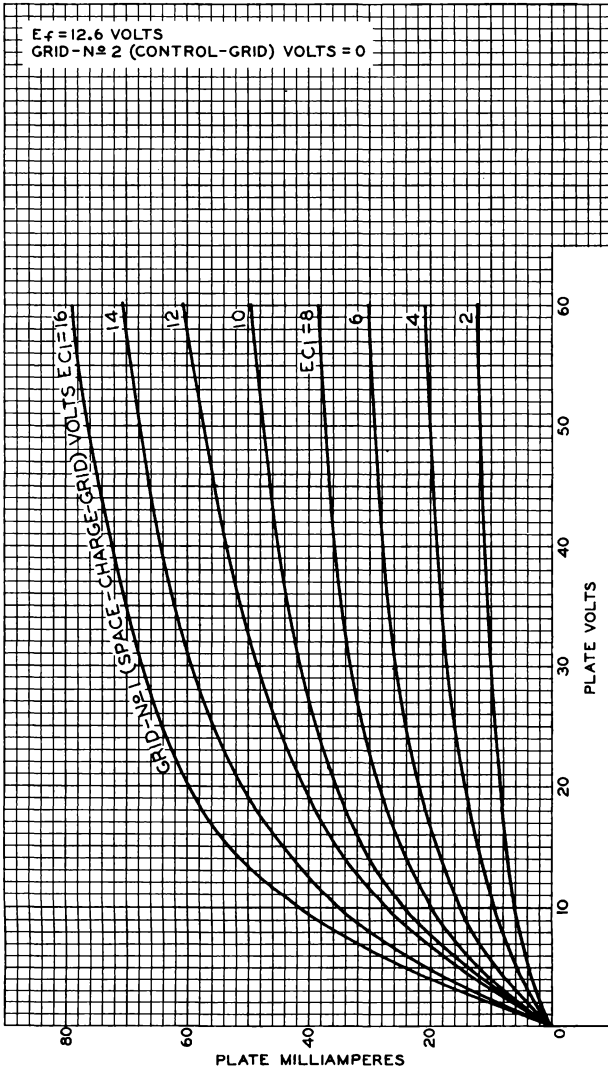




12AL8

AVERAGE PLATE CHARACTERISTICS
TETRODE UNIT

12AL8





12AQ5

12AQ5

BEAM POWER AMPLIFIER

Maximum Circuit Values Per Tube:▲

Grid-No.1-Circuit Resistance:‡

For fixed bias 0.1 max. megohm
For cathode bias 0.5 max. megohm

‡ The type of input coupling used should not introduce too much resistance in the grid-No.1 circuit. Transformer- or impedance-coupling devices are recommended.

▲ If the grid-No.1-circuit resistance is common to two tubes, the indicated maximum values per tube should be halved.

Curves shown under Type 6V6 also apply to 12AQ5

MAY 3, 1954

TUBE DIVISION

TENTATIVE DATA 2

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

12AT6



12AT6
TWIN DIODE—HIGH-MU TRIODE

MINIATURE TYPE

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12AT6 is the same as the 6AT6 except for heater rating.

MAY 3, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



12AQ5

12AQ5

BEAM POWER AMPLIFIER

Maximum Circuit Values Per Tube:▲

Grid-No.1-Circuit Resistance:§

For fixed bias 0.1 max. megohm
For cathode bias 0.5 max. megohm

§ The type of input coupling used should not introduce too much resistance in the grid-No.1 circuit. Transformer- or impedance-coupling devices are recommended.

▲ If the grid-No.1-circuit resistance is common to two tubes, the indicated maximum values per tube should be halved.

Curves shown under Type 6V6 also apply to 12AQ5

AUG.1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA 2



12AT7

HIGH-MU TWIN TRIODE

9-PIN MINIATURE TYPE

12AT7

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater Arrangement	Series	Parallel	
Voltage	12.6	6.3	ac or dc volts
Current	0.15	0.3	amp

Direct Interelectrode Capacitances (Approx.)^o:

Unit No.1 Unit No.2

Grid-Drive Operation:

Grid to Plate	1.5	1.5	μf
Grid to Cathode	2.2	2.2	μf
Plate to Cathode	0.5	0.4	μf
Heater to Cathode	2.4	2.4	μf

Cathode-Drive Operation:

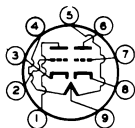
Plate to Cathode	0.2	0.2	μf
Grid & Heater to Cathode	4.6	4.6	μf
Grid & Heater to Plate	1.8	1.8	μf
Grid to Grid	0.005 max.		μf
Plate to Plate	0.4 max.		μf

^o with no external shield.

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip)	1-9/16" ± 3/32"
Maximum Diameter	7/8"
Bulb	T-6-1/2"
Base	Small-Button Noval. 9 Pin (JETEC No.E9-1)
Basing Designation for BOTTOM VIEW	9A

Pin 1 - Plate of
Unit No.2
Pin 2 - Grid of
Unit No.2
Pin 3 - Cathode of
Unit No.2
Pin 4 - Heater
Pin 5 - Heater



Pin 6 - Plate of
Unit No.1
Pin 7 - Grid of
Unit No.1
Pin 8 - Cathode of
Unit No.1
Pin 9 - Heater
Center-Tap

AMPLIFIER - Class A₁

Values are for each unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID VOLTAGE:		
Negative Bias Value	-50 max.	volts
PLATE DISSIPATION	2.5 max.	watts

← Indicates a change

MARCH 1, 1954

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

12AT7



12AT7

HIGH-MU TWIN TRIODE

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . . 90 max. volts

Heater positive with respect to cathode . . 90 max. volts

→ Characteristics:

Plate Supply Voltage	100	250	volts
Cathode-Bias Resistor	270	200	ohms
Amplification Factor	60	60	
Plate Resistance (Approx.)	15000	10900	ohms
Transconductance	4000	5500	μ mhos
Grid Voltage (Approx.)			
for plate current of 10 μ amp . .	-5	-12	volts
Plate Current	3.7	10	ma

→ indicates a change

MARCH 1, 1954

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

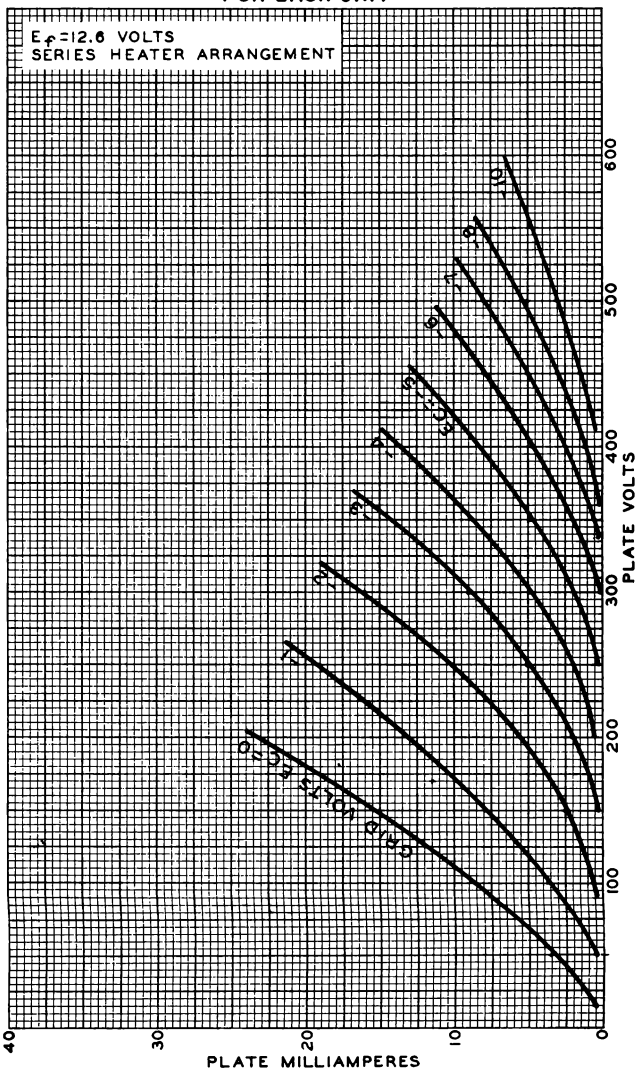
DATA



12AT7

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT

12AT7



AUG. 31, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7056

12AU6



12AU6

SHARP-CUTOFF PENTODE

MINIATURE TYPE

Heater, for Unipotential Cathode:

Voltage. 12.6 ac or dc volts

Current. 0.15 amp

The 12AU6 is the same as the 6AU6 except for heater rating.

FEB. 1, 1949

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



12AU7

12AU7

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage	12.6	6.3	ac or dc volts
Current	0.15	0.3	amp

Direct Interelectrode Capacitances (Approx.):

Unit No.1 Unit No.2

Without external shield:

Grid to plate	1.5	1.5	μf
Grid to cathode and heater.	1.6	1.6	μf
Plate to cathode and heater	0.4	0.32	μf

With external shield, JETEC No.315, connected to cathode:

Grid to plate	1.5	1.5	μf
Grid to cathode and heater.	1.8	1.8	μf
Plate to cathode and heater	2	2	μf

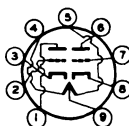
Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage	100	250	volts
Grid Voltage	0	-8.5	volts
Amplification Factor.	20	17	
Plate Resistance (Approx.).	6500	7700	ohms
Transconductance.	3100	2200	μmhos
Plate Current	11.8	10.5	ma
Grid Voltage (Approx.) for plate current of 10 $\mu\text{amp.}$	-	-24	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length.	2-3/16"
Maximum Seated Length	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip).	1-9/16" $\pm$ 3/32"
Maximum Diameter.	7/8"
Bulb.	T-6-1/2
Base.	Small-Button Noval 9-Pin (JETEC No.E9-1)

Basing Designation for BOTTOM VIEW. 9A

Pin 1-Plate of
Unit No.2Pin 2-Grid of
Unit No.2Pin 3-Cathode of
Unit No.2Pins 4 & 9-Heater of
Unit No.2Pins 5 & 9-Heater of
Unit No.1Pin 6-Plate of
Unit No.1Pin 7-Grid of
Unit No.1Pin 8-Cathode of
Unit No.1Pin 9-Heater
Mid-Tap

← Indicates a change.

MAR. 1, 1955

TUBE DIVISION

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

12AU7



12AU7

MEDIUM-MU TWIN TRIODE

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
CATHODE CURRENT	20 max.	ma
PLATE DISSIPATION	2.75 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200 max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:		
For fixed-bias operation	0.25 max.	megohm
For cathode-bias operation	1.0 max.	megohm

Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART No.10
at front of this Section

HORIZONTAL DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-Line, 30-frame system[□]

DC PLATE VOLTAGE	300 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE [▲]	600 max.	volts
CATHODE CURRENT:		
Peak	300 max.	ma
Average	20 max.	ma
PLATE DISSIPATION	2.75 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200 max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:		
For fixed-bias, grid-resistor bias, or cathode-bias operation	2.2 max.	megohms

VERTICAL DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-Line, 30-frame system[□]

DC PLATE VOLTAGE	300 max.	volts
----------------------------	----------	-------

[▲] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

[▲], [□]: See next page.

→ Indicates a change.

MAR. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1



12AU7

12AU7

MEDIUM-MU TWIN TRIODE

PEAK NEGATIVE-PULSE GRID VOLTAGE	400 max.	volts
CATHODE CURRENT:		
Peak	60 max.	ma
Average	20 max.	ma
PLATE DISSIPATION	2.75 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200▲max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias, grid-resistor bias, or
cathode-bias operation 2.2 max. megohms

VERTICAL DEFLECTION AMPLIFIER*Values are for Each Unit***Maximum Ratings, Design-Center Values Except as Noted:***For operation in a 525-line, 30-frame system[□]*

DC PLATE VOLTAGE	300 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE* (Absolute maximum)	1200▲max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	250 max.	volts
CATHODE CURRENT:		
Peak	60 max.	ma
Average	20 max.	ma
PLATE DISSIPATION	2.75 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200▲max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For cathode-bias operation 2.2 max. megohms

▲ The dc component must not exceed 100 volts.

□ As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

* This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.

■ Under no circumstances should this absolute value be exceeded.

*The curves under Type 6C4 also apply to each unit
of the 12AU7*

← Indicates a change.

MAR. 1, 1955

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

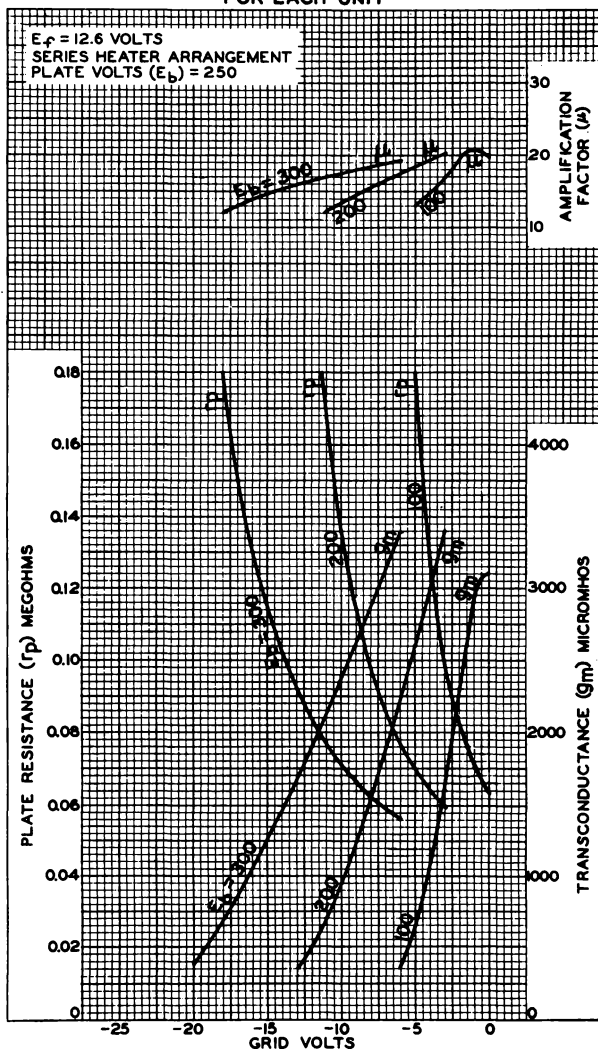
DATA 2

12AU7



12AU7

AVERAGE CHARACTERISTICS FOR EACH UNIT



MAR. 18, 1955

 TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8564



12AV6

12AV6

TWIN DIODE—HIGH-MU TRIODE

MINIATURE TYPE

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12AV6 is the same as the 6AV6 except for heater rating.

OCTOBER 15, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



12AV7

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

12AV7

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater Arrangement	Series	Parallel	
Voltage	12.6	6.3	ac or dc volts
Current	0.225	0.45	amp

Direct Interelectrode Capacitances:

Unit No.1 Unit No.2

Without external shield:

Grid to plate	1.9	1.9	$\mu\mu\text{f}$
Grid to cathode and heater.	3.1	3.1	$\mu\mu\text{f}$
Plate to cathode.	0.24	0.24	$\mu\mu\text{f}$
Plate to cathode and heater	0.5	0.4	$\mu\mu\text{f}$
Plate to grid and heater. .	2	2	$\mu\mu\text{f}$
Cathode to grid and heater.	6.9	6.9	$\mu\mu\text{f}$
Cathode to heater	3.8	3.8	$\mu\mu\text{f}$

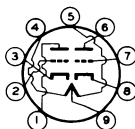
With external shield, JETEC No.315, connected to cathode, except as noted:

Grid to plate	1.9	1.9	$\mu\mu\text{f}$
Grid to cathode and heater.	3.2	3.2	$\mu\mu\text{f}$
Plate to cathode.	0.24	0.23	$\mu\mu\text{f}$
Plate to cathode and heater	1.3	1.6	$\mu\mu\text{f}$
Plate to grid, heater, and external shield	2.8	3.2	$\mu\mu\text{f}$
Cathode to grid, heater, and external shield . .	7	7	$\mu\mu\text{f}$
Heater to cathode	4	4	$\mu\mu\text{f}$

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JETEC No.E9-1)

Basing Designation for BOTTOM VIEW 9A

Pin 1-Plate of
Unit No.2Pin 2-Grid of
Unit No.2Pin 3-Cathode of
Unit No.2Pins 4,9-Heater of
Unit No.2Pins 5,9-Heater of
Unit No.1Pin 6-Plate of
Unit No.1Pin 7-Grid of
Unit No.1Pin 8-Cathode of
Unit No.1Pin 9-Heater
Mid-Tap

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

12AV7



12AV7

MEDIUM-MU TWIN TRIODE

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID VOLTAGE:		
Negative bias value	-50 max.	volts
PLATE DISSIPATION	2.7 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	90 max.	volts
Heater positive with respect to cathode .	90 max.	volts

Typical Operation and Characteristics:

Plate Supply Voltage	100	150	volts
Cathode-Bias Resistor	120	56	ohms
Amplification Factor	37	41	
Plate Resistance	6100	4800	ohms
Transconductance	6100	8500	μ mhos
Plate Current	9	18	ma
Grid Voltage (Approx.) for plate current of 10 μ amp	-9	-12	volts

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



12AW6

SHARP-CUTOFF PENTODE

MINIATURE TYPE

12AW6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.15 amp

Direct Interelectrode Capacitances (Approx.)^o:

Grid to Plate 0.025 max. μf

Input 6.5 μf

Output 1.5 μf

^o With no external shield.

Mechanical:

Mounting Position Any

Maximum Overall Length 2-1/8"

Maximum Seated Length 1-7/8"

Length from Base Seat to Bulb Top (excluding tip) 1-1/2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin

Basing Designation for BOTTOM VIEW 7CM

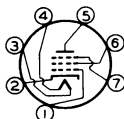
Pin 1-Grid No.1

Pin 2-Cathode

Pin 3-Heater

Pin 4-Heater

Pin 5-Plate



Pin 6-Grid No.2

Pin 7-Grid No.3,

Internal
Shield

AMPLIFIER - Class A₁

Pentode Connection

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 150 max. volts

GRID-No.2 SUPPLY VOLTAGE 300 max. volts

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Negative bias value 50 max. volts

Positive bias value 0 max. volts

PLATE DISSIPATION 2 max. watts

GRID-No.2 DISSIPATION 0.5 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

Plate Voltage 100 125 250 . . volts

Grid-No.3 (Suppressor)

Voltage^o Connected to cathode at socket

Grid-No.2 Voltage 100 125 150 . . volts

Cathode-Bias Resistor 100 100 200 . . ohms

^o See next page.

APRIL 15, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

12AW6



12AW6

SHARP-CUTOFF PENTODE

Plate Resistance (Approx.)	0.3	0.5	0.8	..	megohm
Transconductance	4750	5100	5000	..	μ mhos
Grid-No.1 Voltage for plate current of 10 μ amp	-5	-6	-8	..	volts
Plate Current	5.5	7.2	7	..	ma.
Grid-No.2 Current	1.6	2.1	2	..	ma.

AMPLIFIER—Class A₁Triode Connection[▲]

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Negative bias value	50 max.	volts
Positive bias value	0 max.	volts
PLATE AND GRID-No.2 DISSIPATION (Total)	2.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage.	180	250	..	volts
Cathode-Bias Resistor	350	825	..	ohms
Plate Resistance	7900	11000	..	ohms
Amplification Factor	45	42		
Transconductance	5700	3800	..	μ mhos
Plate Current.	7.0	5.5	..	ma.

□ Grid-No.3 is not suitable for use as a control or signal electrode.

▲ Grid-No.2 tied to plate and grid-No.3 tied to cathode.

APRIL 15, 1947

TUBE DEPARTMENT

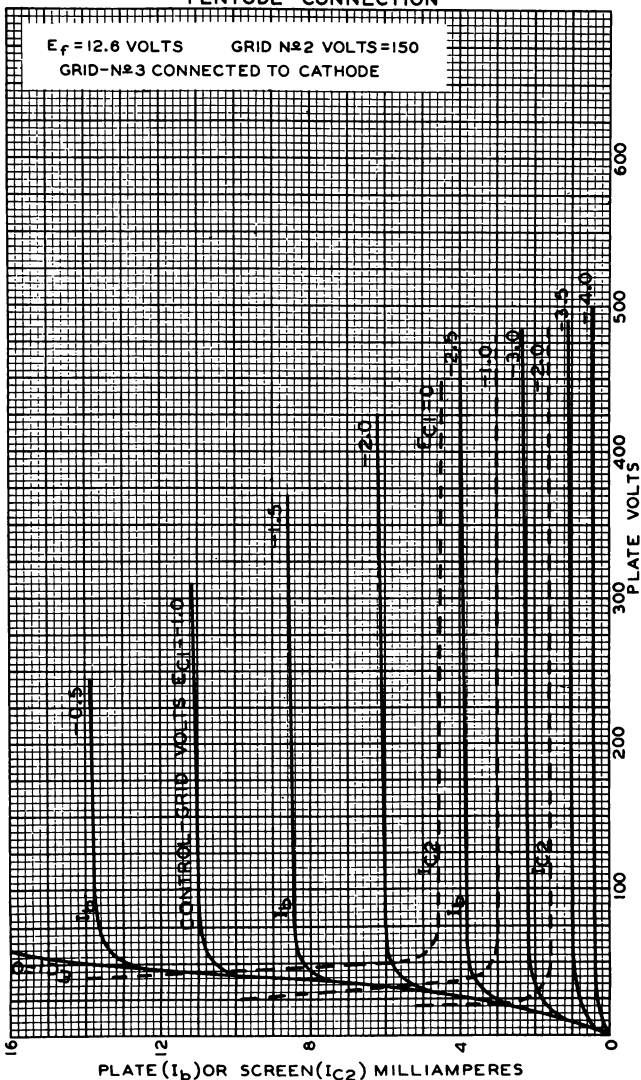
TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



12AW6

12AW6 AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



MARCH 26, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

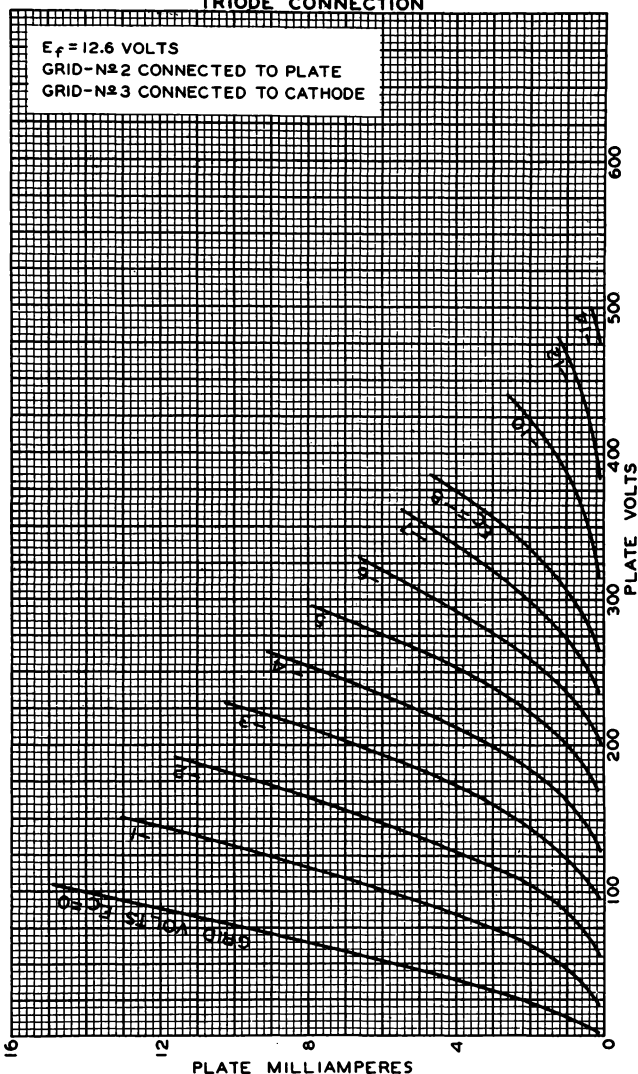
92CM-6855

12AW6



12AW6

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



MARCH 26, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6856



12AX4-GT
12AX4-GTA

12AX4-GT HALF-WAVE VACUUM RECTIFIER

For Television Damper Service

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.6 amp

The 12AX4-GT is the same as the 6AX4-GT except for heater rating.

12AX4-GTA HALF-WAVE VACUUM RECTIFIER

*Intended for TV damper service in equipment
having series heater-string arrangement*

The 12AX4-GTA is the same as the 6AX4-GT except for the following items:

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.6 amp

Warm-up time (Average). 11 sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.



12AX7

HIGH-MU TWIN TRIODE

9-PIN MINIATURE TYPE

12AX7

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater Arrangement	Series	Parallel	
Voltage.	12.6	6.3	ac or dc volts
Current.	0.15	0.3	amp

Direct Interelectrode Capacitances:^o

	Unit No. 1	Unit No. 2	
Grid to plate	1.7	1.7	μf
Grid to cathode and heater	1.6	1.6	μf
Plate to cathode and heater	0.46	0.34	μf

Mechanical:

Mounting Position. Any

Maximum Overall Length. 2-3/16"

Maximum Seated Length. 1-5/16"

Length, Base Seat to Bulb Top (Excluding tip). 1-9/16" ± 3/32"

Maximum Diameter. 7/8"

Bulb T-6-1/2

Base Small-Button Noval 9-Pin (JETEC No. E9-1)

Basing Designation for BOTTOM VIEW. 9A

Pin 1—Plate of Unit No. 2

Pin 2—Grid of Unit No. 2

Pin 3—Cathode of Unit No. 2

Pins 4 & 9—Heater of Unit No. 2

Pins 5 & 9—Heater of Unit No. 1

Pin 6—Plate of Unit No. 1

Pin 7—Grid of Unit No. 1

Pin 8—Cathode of Unit No. 1

Pin 9—Heater Mid-Tap

AMPLIFIER—Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRID VOLTAGE:

Negative bias value. 50 max. volts

Positive bias value. 0 max. volts

PLATE DISSIPATION. 1 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . 180 max. volts

Heater positive with respect to cathode. . 180 max. volts

Characteristics:

Plate Voltage. 100 250 volts

^o With no external shield.

—Indicates a change.

NOV. 5, 1954

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

12AX7



12AX7

HIGH-MU TWIN TRIODE

Grid Voltage	-1	-2		volts
Amplification Factor . . .	100	100		
Plate Resistance	80000	62500		ohms
Transconductance	1250	1600		μ mhos
Plate Current.	0.5	1.2		ma

→ Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART No. 25
at front of this Section

→ Indicates a change.

NOV. 5, 1954

DATA

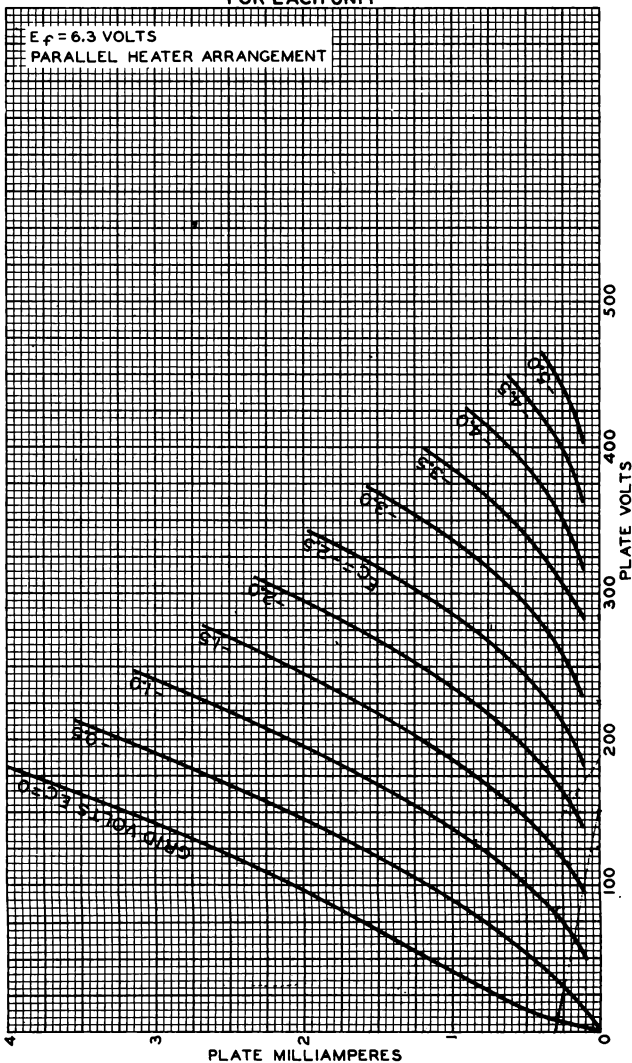
TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



12AX7

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



JULY 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

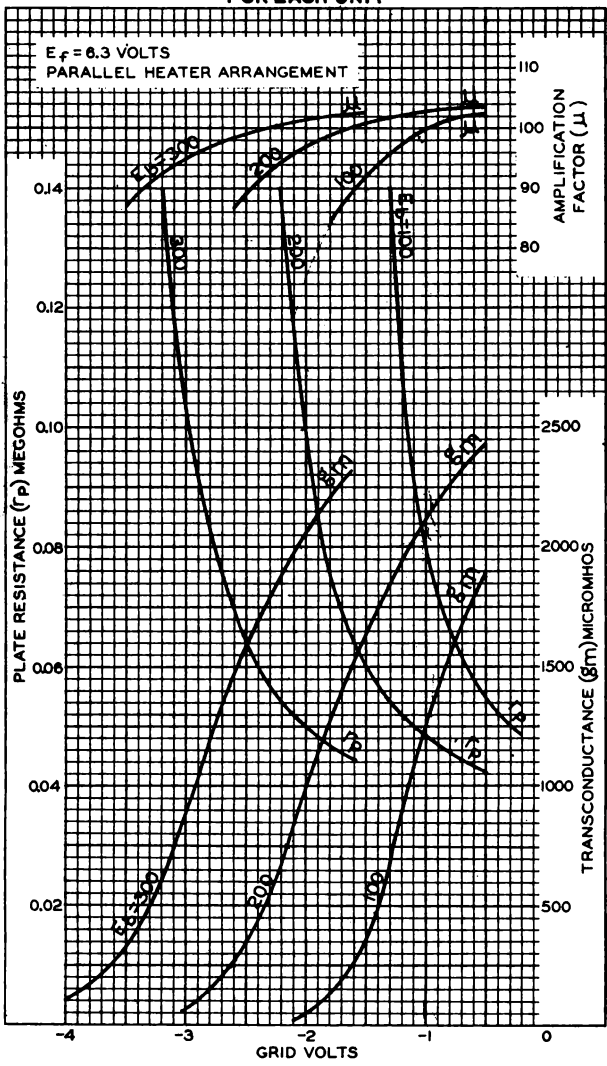
92CM-6879

12AX7



12AX7

AVERAGE CHARACTERISTICS FOR EACH UNIT



JULY 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6680



12AZ7

12AZ7

HIGH-MU TWIN TRIODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage	12.6	6.3	ac or dc volts
Current	0.225	0.450	amp

Direct Interelectrode Capacitances (Approx.):

	Without External Shield	With External Shield ^o	
Grid-Drive Operation:			
Grid to plate (Each unit) . .	1.9	1.9	$\mu\mu\text{f}$
Grid to heater and cathode (Each unit)	3.1	3.2	$\mu\mu\text{f}$
Plate to heater and cathode (Unit No.1)	0.5	1.3	$\mu\mu\text{f}$
Plate to heater and cathode (Unit No.2)	0.4	1.6	$\mu\mu\text{f}$
Heater to cathode (Each unit)	3.8	4	$\mu\mu\text{f}$

Cathode-Drive Operation:

Plate to cathode (Each unit).	0.24	0.23	$\mu\mu\text{f}$
Cathode to grid and heater (Each unit)	6.9	7	$\mu\mu\text{f}$
Plate to grid and heater (Unit No.1)	2	2.8	$\mu\mu\text{f}$
Plate to grid and heater (Unit No.2)	2	3.2	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier (Each Unit):

Plate-Supply Voltage	100	250	volts
Cathode-Bias Resistor	270	200	ohms
Amplification Factor	60	60	
Plate Resistance (Approx.) . . .	15000	10900	ohms
Transconductance	4000	5500	μmhos
Plate Current	3.7	10	ma
Grid Voltage (Approx.) for plate current of 10 μamp	-5	-12	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip) . .	1-9/16" $\pm$ 3/32"
Maximum Diameter	7/8"
Bulb	T-6-1/2

^o With external shield JETEC No.315 connected to cathode of unit under test.

MAY 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

12AZ7



12AZ7

HIGH-MU TWIN TRIODE

Base Small-Button Noval 9-Pin (JETEC No.E9-1)
 Basing Designation for BOTTOM VIEW 9A

Pin 1-Plate of
 Unit No.2

Pin 2-Grid of
 Unit No.2

Pin 3-Cathode of
 Unit No.2

Pins 4 & 9-Heater of
 Unit No.2

Pins 5 & 9-Heater of
 Unit No.1



Pin 6-Plate of
 Unit No.1

Pin 7-Grid of
 Unit No.1

Pin 8-Cathode of
 Unit No.1

Pin 9-Heater
 Mid-Tap

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRID VOLTAGE:

Negative bias value. 50 max. volts

PLATE DISSIPATION 2.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . 90 max. volts

Heater positive with respect to cathode. . 90 max. volts

MAY 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



I2B4-A LOW-MU TRIODE

9-PIN MINIATURE TYPE

*Intended for use in equipment having
series heater-string arrangement*

I2B4-A

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

	Series	Parallel	
Heater arrangement			
Voltage.	12.6	6.3	ac or dc volts
Current.	0.300	0.600	amp
Warm-up time (Average)	-	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances (Approx.):^o

Grid to plate.	4.8	μμf
Grid to cathode and heater	5	μμf
Plate to cathode and heater.	1.5	μμf

Characteristics, Class A₁ Amplifier:

Plate Voltage.	150	volts
Grid Voltage	-17.5	volts
Amplification Factor	6.5	
Plate Resistance (Approx.)	1030	ohms
Transconductance	6300	μmhos
Plate Current.	34	ma
Grid Voltage (Approx.) for plate current of 200 μamp.	-32	volts
Plate Current for grid voltage of -23 volts	9.6	ma

Mechanical:

Mounting Position.	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length.	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip).	2" ± 3/32"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JETEC No. E9-1)

Basing Designation for BOTTOM VIEW 9AG

- Pin 1 - Cathode
- Pin 2 - Grid
- Pin 3 - Heater
- Mid-Tap
- Pin 4 - Heater
- Pin 5 - Heater



- Pin 6 - No Connection
- Pin 7 - Grid
- Pin 8 - No Connection
- Pin 9 - Plate

^o With external shield JETEC No. 315 connected to cathode.

MAY 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

12B4-A



12B4-A

LOW-MU TRIODE

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	550	max.	volts
GRID VOLTAGE:			
Negative bias value.	50	max.	volts
PLATE DISSIPATION.	5.5	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode . .	200	max.	volts
Heater positive with respect to cathode . .	200 [▲]	max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:			
For fixed-bias operation	0.47	max.	megohm
For cathode-bias operation	2.2	max.	megohms

VERTICAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	550	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum)*.	1000 [■]	max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE . . .	250	max.	volts
CATHODE CURRENT:			
Peak	105	max.	ma
Average	30	max.	ma
PLATE DISSIPATION.	5.5	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode . .	200	max.	volts
Heater negative with respect to cathode . .	200 [▲]	max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:			
For cathode-bias operation	2.2	max.	megohms

[▲] The dc component must not exceed 100 volts.

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

* This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.

[■] Under no circumstances should this absolute value be exceeded.

MAY 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



12BA6

REMOTE-CUTOFF PENTODE

MINIATURE TYPE

Heater, for Unipotential Cathode:
Voltage. 12.6 ac or dc volts
Current. 0.15 amp
The 12BA6 is the same as the 6BA6 except for heater rating.

12BA6
12BD6
12BE6
12BF6

12BA7

PENTAGRID CONVERTER

9-PIN MINIATURE TYPE

Heater, for Unipotential Cathode:
Voltage. 12.6 ac or dc volts
Current. 0.15 amp
The 12BA7 is the same as the 6BA7 except for heater rating.

12BD6

REMOTE-CUTOFF PENTODE

MINIATURE TYPE

Heater, for Unipotential Cathode:
Voltage. 12.6 ac or dc volts
Current. 0.15 amp
The 12BD6 is the same as the 6BD6 except for heater rating.

12BE6

PENTAGRID CONVERTER

MINIATURE TYPE

Heater, for Unipotential Cathode:
Voltage. 12.6 ac or dc volts
Current. 0.15 amp
The 12BE6 is the same as the 6BE6 except for heater rating.

12BF6

TWIN DIODE—MEDIUM-MU TRIODE

MINIATURE TYPE

Heater, for Unipotential Cathode:
Voltage. 12.6 ac or dc volts
Current. 0.15 amp
The 12BF6 is the same as the 6BF6 except for heater rating.



12BH7

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

The 12BH7 is the same as the 12BH7-A except that the 12BH7 does not have a controlled Heater Warm-up Time, and is not intended for use in equipment having series heater-string arrangement.

MAR. 1, 1955

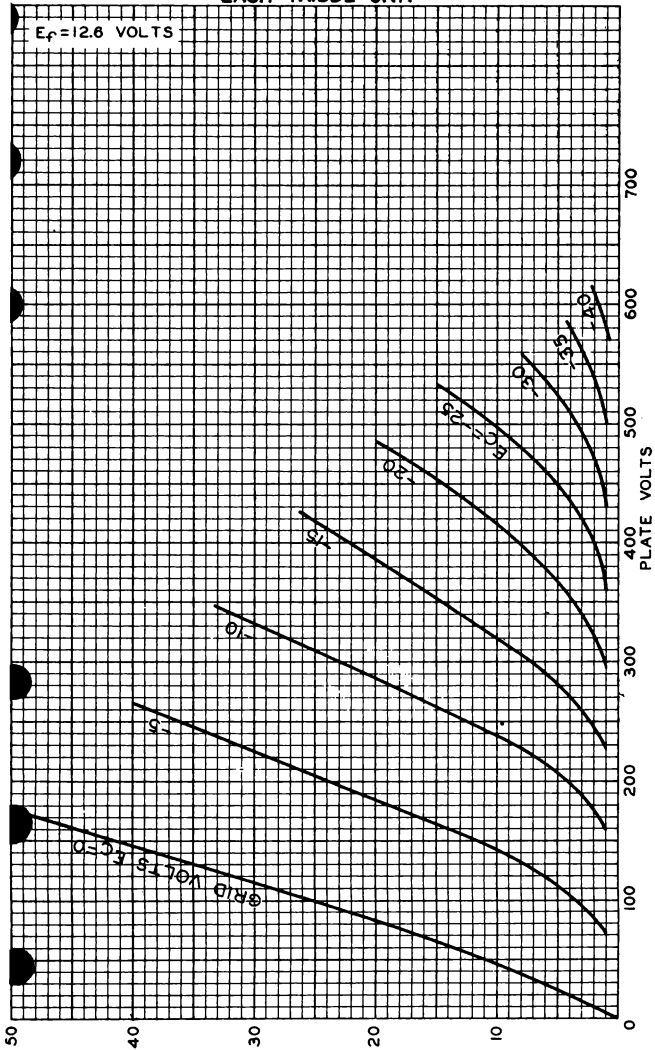
TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



128H7

AVERAGE PLATE CHARACTERISTICS
EACH TRIODE UNIT



JAN. 25, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7742



12BH7-A

12BH7-A

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

Intended for use in equipment having
series heater-string arrangement

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage	12.6	6.3	ac or dc volts
Current	0.3	0.6	amp
Warm-up time (Average)	—	11	sec

For definition of heater warm-up time and method of determining it, see sheet **HEATER WARM-UP TIME MEASUREMENT** at front of this Section.

Direct Interelectrode Capacitances (Approx.):^o

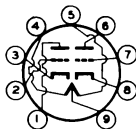
	Unit No.1	Unit No.2	
Grid to plate	2.6	2.6	$\mu\mu\text{f}$
Grid to cathode and heater.	3.2	3.2	$\mu\mu\text{f}$
Plate to cathode and heater.	0.5	0.4	$\mu\mu\text{f}$
Plate of unit No.1 to plate of unit No.2	0.8		$\mu\mu\text{f}$

Mechanical:

Mounting Position Any
 Maximum Overall Length 2-5/8"
 Maximum Seated Length 2-3/8"
 Length, Base Seat to Bulb Top (Excluding tip) . . . 2" $\pm$ 3/32"
 Maximum Diameter 7/8"
 Bulb T-6-1/2
 Base Small-Button Noval 9-Pin (JETEC No.E9-1)

Basing Designation for BOTTOM VIEW 9A

Pin 1-Plate of Unit No.2	Pin 6-Plate of Unit No.1
Pin 2-Grid of Unit No.2	Pin 7-Grid of Unit No.1
Pin 3-Cathode of Unit No.2	Pin 8-Cathode of Unit No.1
Pins 4 & 9-Heater of Unit No.2	Pin 9-Heater Mid-Tap
Pins 5 & 9-Heater of Unit No.1	



AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

^o Without external shield.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

12BH7-A



12BH7-A

MEDIUM-MU TWIN TRIODE

GRID VOLTAGE:

Negative bias value	50 max.	volts
Positive bias value	0 max.	volts

CATHODE CURRENT	20 max.	ma
---------------------------	---------	----

PLATE DISSIPATION	3.5 max.	watts
-----------------------------	----------	-------

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200▲max.	volts

Characteristics:

Plate Voltage	250	volts
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Grid Voltage.	-10.5	volts
-----------------------	-------	-------

Amplification Factor.	16.5	
-------------------------------	------	--

Plate Resistance (Approx.)	5300	ohms
--------------------------------------	------	------

Transconductance.	3100	μmhos
---------------------------	------	-------

Plate Current	11.5	ma
-------------------------	------	----

Plate Current for grid voltage of -14 volts	4	ma
--	---	----

Grid Voltage (Approx.) for plate current of 50 μamp	-23	volts
--	-----	-------

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias operation.	0.25 max.	megohm
For cathode-bias operation.	1.0 max.	megohm

HORIZONTAL DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE.	450 max.	volts
---------------------------	----------	-------

PEAK NEGATIVE-PULSE GRID VOLTAGE [•]	600 max.	volts
---	----------	-------

CATHODE CURRENT:

Peak.	300 max.	ma
---------------	----------	----

Average	20 max.	ma
-------------------	---------	----

PLATE DISSIPATION	3.5 max.	watts
-----------------------------	----------	-------

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200▲max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias, grid-resistor bias, or cathode-bias operation.	2.2 max.	megohms
---	----------	---------

[•] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

▲, □: See next page.

MAR. 1, 1955

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA 1



12BH7-A

MEDIUM-MU TWIN TRIODE

12BH7-A

VERTICAL DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	450 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	400 max.	volts
CATHODE CURRENT:		
Peak	70 max.	ma
Average	20 max.	ma
PLATE DISSIPATION	3.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias, grid-resistor bias, or
cathode-bias operation 2.2 max. megohms

VERTICAL DEFLECTION AMPLIFIER

Values are for Each Unit

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	450 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE [#]		
(Absolute Maximum)	1500 [■] max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	250 max.	volts
CATHODE CURRENT:		
Peak	70 max.	ma
Average	20 max.	ma
PLATE DISSIPATION	3.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For cathode-bias operation 2.2 max. megohms

[▲] The dc component must not exceed 100 volts.

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

[#] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.

[■] Under no circumstances should this absolute value be exceeded.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA 2

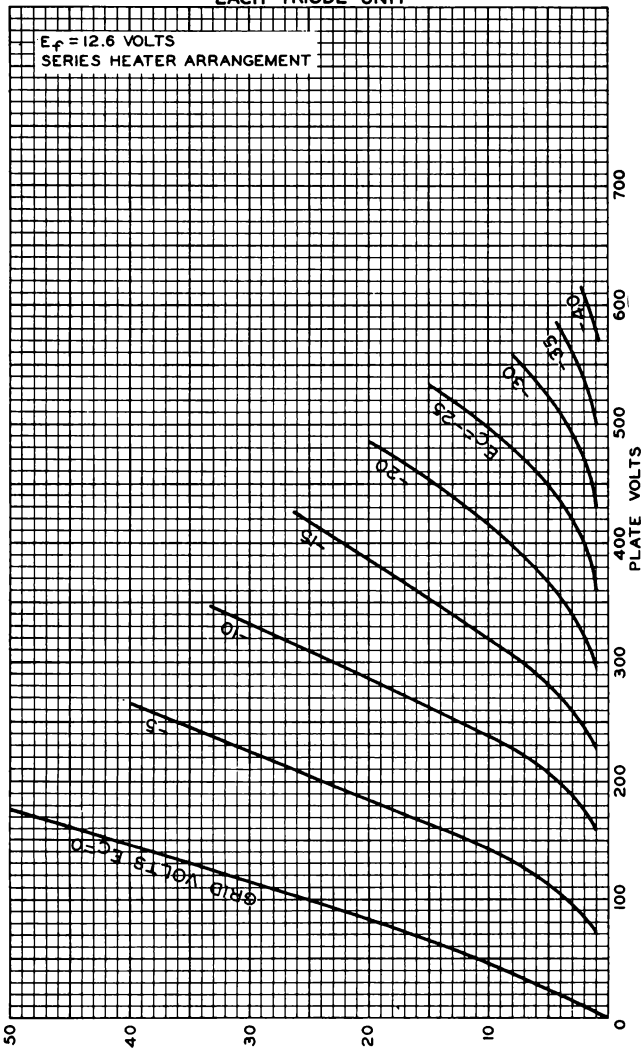
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12BH7-A



12BH7-A

AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT



MAR. 1, 1955

PLATE MILLIAMPERES
TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7742RI



12BQ6-GTB

12BQ6-GTB/12CU6

BEAM POWER TUBE

*Intended for use in equipment having
series heater-string arrangement*

The 12BQ6-GTB/12CU6 is the same as the 6BQ6-GTB/6CU6 except for the following items:

Heater, for Unipotential Cathode:

Voltage.	12.6		ac or dc volts
Current.	0.6		amp
Warm-up time (Average) .	11		sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.



12BY7

12BY7

SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Heater Arrangement	Series	Parallel	
Voltage	12.6	6.3	ac or dc volts
Current	0.3	0.6	amp

Direct Interelectrode Capacitances (Without external shield):

Grid No.1 to plate	0.055	μ f
Grid No.1 to cathode, heater, grid No.2, and grid No.3 & internal shield	11.1	μ f
Plate to cathode, heater, grid No.2, and grid No.3 & internal shield	3	μ f

Characteristics, Class A₁ Amplifier:

Plate Supply Voltage	250	volts
Grid-No.2 Voltage	150	volts
Cathode-Bias Resistor	68	ohms
Amplification Factor	1200	
Plate Resistance	90000	ohms
Transconductance	12000	μ mhos
Plate Current	25	ma
Grid-No.2 Current	6	ma
Grid Voltage (Approx.) for plate current of 20 μ amp	-10	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip)	2" $\pm$ 3/32"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JETEC No.E9-1)
Basing Designation for BOTTOM VIEW	98F

Pin 1-Cathode
Pin 2-Grid No.1,
Pin 3-Grid No.3,
Int. Shield
Pin 4-Heater
Pin 5-Heater



Pin 6-Heater
Mid-Tap
Pin 7-Plate
Pin 8-Grid No.2
Pin 9-Grid No.3,
Int. Shield

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID-No.3 (SUPPRESSOR) VOLTAGE	0 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	175 max.	volts

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

12BY7



12BY7

SHARP-CUTOFF PENTODE

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Negative bias value 50 max. volts

Positive bias value 0 max. volts

PLATE DISSIPATION 6.25 max. watts

GRID-No.2 INPUT 1 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . 180 max. volts

Heater positive with respect to cathode . 180 max. volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation 0.25 max. megohm

For cathode-bias operation 1 max. megohm

JUNE 14, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



12BY7-A

12BY7-A

SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

*Intended for use in equipment having
series heater-string arrangement*

The 12BY7-A is the same as the 12BY7 except for the following items:

Heater, for Unipotential Cathode:

Heater arrangement *Parallel*

Warm-up time (Average) 11 sec

*For definition of heater warm-up time and method of determining
it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of
this Section.*

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . 200 max. volts

Heater positive with respect to cathode. . 200[▲]max. volts

[▲] The dc component must not exceed 100 volts.



12C8

12C8

TWIN DIODE—REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12C8 is the same as the 6B8 except for heater rating.



12CA5

12CA5

BEAM POWER TUBE

MINIATURE TYPE

*Intended for use in equipment having
series heater-string arrangement*

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 12.6 ac or dc volts

Current. 0.6 amp

Warm-up time (Average) 11 sec

*For definition of heater warm-up time and method of determining
it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of
this Section.*

Direct Interelectrode Capacitances (Approx.):^oGrid No.1 to plate 0.5 μ fGrid No.1 to cathode & grid No.3,
grid No.2, and heater. 15 μ fPlate to cathode & grid No.3,
grid No.2, and heater. 9 μ f**Mechanical:**

Mounting Position. Any

Maximum Overall Length 2-5/8"

Maximum Seated Length. 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip). . . 2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

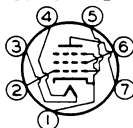
Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 7CV

Pin 1-Cathode,
Grid No.3

Pin 2-Grid No.1

Pin 3-Heater



Pin 4-Heater

Pin 5-Grid No.1

Pin 6-Grid No.2

Pin 7-Plate

AMPLIFIER - Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 130 max. volts

GRID-No.2 (SCREEN) VOLTAGE 130 max. volts

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value. 0 max. volts

PLATE DISSIPATION. 5 max. watts

GRID-No.2 INPUT. 1.4 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . . 200 max. volts

Heater positive with respect to cathode. . . 200[▲] max. volts

BULB TEMPERATURE (At hottest

point on bulb surface) 180 max. °C

^o Without external shield.[▲] The dc component must not exceed 100 volts.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

12CA5



12CA5

BEAM POWER TUBE

Typical Operation and Characteristics:

Plate Voltage.	110	125	volts
Grid-No.2 Voltage.	110	125	volts
Grid-No.1 Voltage.	-4	-4.5	volts
Peak AF Grid-No.1 Voltage.	4	4.5	volts
Zero-Signal Plate Current.	32	37	ma
Max.-Signal Plate Current.	31	36	ma
Zero-Signal Grid-No.2 Current.	3.5	4	ma
Max.-Signal Grid-No.2 Current.	7.5	11	ma
Plate Resistance (Approx.)	16000	15000	ohms
Transconductance	8100	9200	μ mhos
Load Resistance.	3500	4500	ohms
Total Harmonic Distortion.	5	6	%
Max.-Signal Power Output	1.1	1.5	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max. megohm
For cathode-bias operation	0.5 max. megohm

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

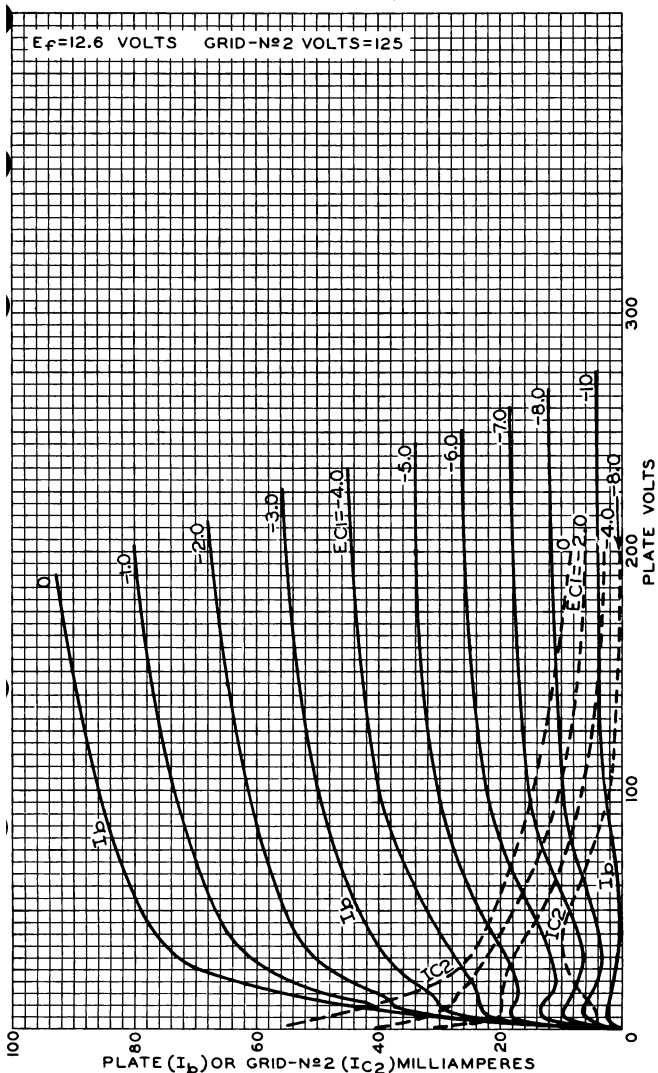
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



12CA5

12CA5

AVERAGE PLATE CHARACTERISTICS



JAN. 24, 1955

TUBE DIVISION

92CM-8507

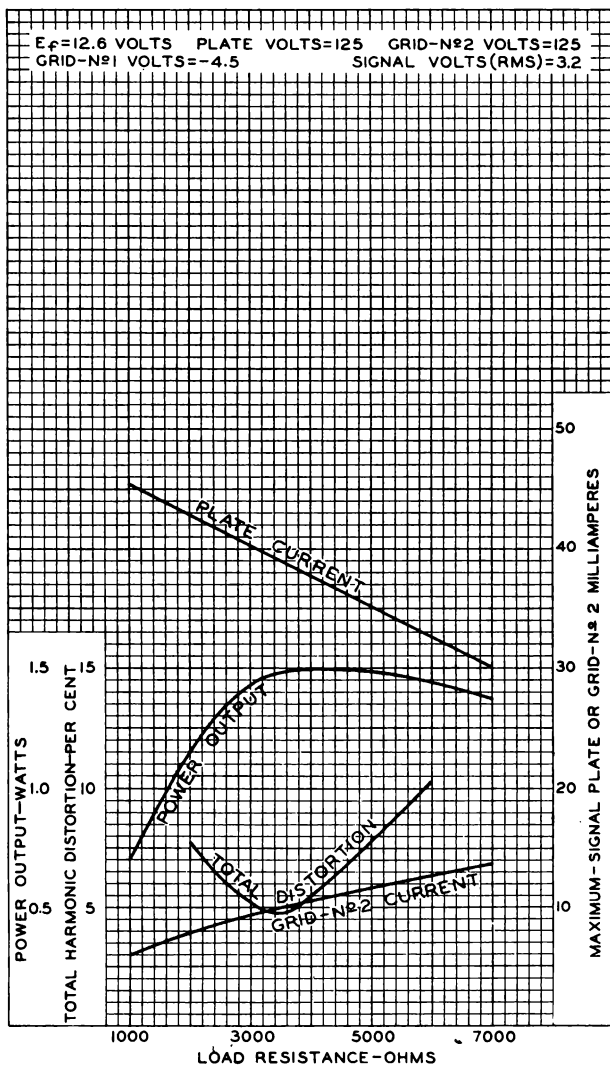
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

12CA5



12CA5

OPERATION CHARACTERISTICS



JAN. 20, 1955

 TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8506R1



12CN5

12CN5

REMOTE-CUTOFF PENTODE

7-PIN MINIATURE TYPE

For use in automobile radio receivers operating directly
from 12-volt storage batteries

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage range. 10 to 15.9 dc volts

This voltage range is on an absolute basis. For longest life, it is recommended that the heater be operated within the voltage range of 11 to 14 volts.

Current (Approx.)

at 12.6 volts. 0.45 amp

Direct Interelectrode Capacitance:

	Without External Shield	With External Shield ^o	
Grid No.1 to plate	0.25 max.	0.2 max.	μf

Mechanical:

Operating Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length. 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip). . . 2" $\pm$ 3/32"

Diameter 0.650" to 0.750"

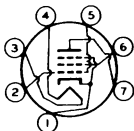
Dimensional Outline. See General Section

Bulb T5-1/2

Base Small-Button Miniature 7-Pin (JEDEC No.E7-1)

Basing Designation for BOTTOM VIEW 7CV

Pin 1—Cathode,
Grid No.3
Pin 2—Grid No.1
Pin 3—Heater



Pin 4—Heater
Pin 5—Grid No.1
Pin 6—Grid No.2
Pin 7—Plate

AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 16 max. volts

GRID-No.2 (SCREEN-GRID) VOLTAGE. 16 max. volts

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive-bias value. 0 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 16 max. volts

Heater positive with respect to cathode. 16 max. volts

Characteristics with 12.6 Volts on Heater:

Plate Voltage. 12.6 volts

Grid-No.2 Voltage. 12.6 volts

^o With external shield JEDEC No.316 connected to pin 1.

12CN5



12CN5

REMOTE-CUTOFF PENTODE

Grid-No.1 Supply Voltage.	0	volts
Grid-No.1 Resistor (Bypassed)	2.2	megohms
Plate Resistance (Approx.)	40000	ohms
Transconductance.	3800	μ mhos
Plate Current	4.5	ma
Grid-No.2 Current	3.5	ma

Maximum Circuit Values:

Grid-No.1-Circuit Resistance.	2.2 max. megohms
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12CU5

BEAM POWER TUBE

7-PIN MINIATURE TYPE

*Intended for use in equipment having
series heater-string arrangement*

12CU5

The 12CU5 is the same as the 6CU5 except for the following items:

Heater, for Unipotential Cathode:

Voltage.	12.6		ac or dc volts
Current.	0.6		amp
Warm-up time (Average) .	11		sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT AT FRONT OF this Section.

**12CX6****SHARP-CUTOFF PENTODE**

7-PIN MINIATURE TYPE

*For use in automobile radio receivers operating directly from 12-volt storage batteries***12CX6****GENERAL DATA****Electrical:**

Heater, for Unipotential Cathode:

Voltage range. 10 to 15.9 dc volts

This voltage range is on an absolute basis. For longest life, it is recommended that the heater be operated within the voltage range of 11 to 14 volts.

Current (Approx.)

at 12.6 volts. 0.15 amp

Direct Interelectrode Capacitances:^oGrid No.1 to plate 0.05 max. μ fGrid No.1 to cathode, grid No.3,
grid No.2, and heater. 7.6 μ fPlate to cathode, grid No.3,
grid No.2, and heater. 6.2 μ f**Mechanical:**

Operating Position Any

Maximum Overall Length 2-1/8"

Maximum Seated Length. 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip). . 1-1/2" $\pm$ 3/32"

Diameter 0.650" to 0.750"

Dimensional Outline. See General Section

Bulb T5-1/2

Base Small-Button Miniature 7-Pin (JEDEC No.E7-1)

Basing Designation for BOTTOM VIEW 7BK

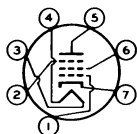
Pin 1—Grid No.1
Pin 2—Grid No.3
Pin 3—Heater
Pin 4—HeaterPin 5—Plate
Pin 6—Grid No.2
Pin 7—Cathode**AMPLIFIER — Class A₁****Maximum Ratings, Design-Maximum Values:**

PLATE VOLTAGE. 33 max. volts

GRID-No.2 (SCREEN-GRID) VOLTAGE. 33 max. volts

GRID-No.1 (CONTROL-GRID) VOLTAGE:
Positive-bias value. 0 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 30 max. volts

Heater positive with respect to cathode. 30 max. volts

Characteristics:

Heater Voltage 12.6 volts

Plate Voltage. 12.6 volts

^o Without external shield.

12CX6



12CX6

SHARP-CUTOFF PENTODE

Grid-No.3 (Suppressor-Grid) Voltage . . .	0	volts
Grid-No.2 Voltage	12.6	volts
Grid-No.1 Supply Voltage.	0	volts
Grid-No.1 Resistor (Bypassed)	2.2	megohms
Plate Resistance (Approx.).	40000	ohms
Transconductance.	3100	μ mhos
Plate Current	3	ma
Grid-No.2 Current	1.4	ma
Grid-No.1 Voltage (Approx.) for plate $\mu a = 10$	-4.5	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance.	10 max.	megohms
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12D4

12D4

HALF-WAVE VACUUM RECTIFIER

*Intended for TV damper service in equipment
having series heater-string arrangement*

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage.	12.6		ac or dc volts
Current.	0.6		amp
Warm-up time (Average).	11		sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances (Approx.):^o

Plate to cathode and heater.	6	μf
Cathode to plate and heater.	8	μf
Heater to cathode.	3	μf

Mechanical:

Operating Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length.	2-3/4"
Maximum Diameter	1-9/32"
Dimensional Outline.	See General Section

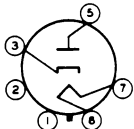
Bulb T9

Base Intermediate-Shell Octal 5-Pin,
Arrangement 2 (JEDEC Group 1, No.B5-82),
Intermediate-Shell Octal 6-Pin,
Arrangement 1 (JEDEC Group 1, No.B6-8),
Short Intermediate-Shell Octal 5-Pin
with External Barriers, Arrangement 2
(JEDEC Group 1, No.B5-85), or
Short Intermediate-Shell Octal 6-Pin
with External Barriers, Arrangement 1
(JEDEC Group 1, No.B6-60)

Basing Designation for BOTTOM VIEW 4CG

Pin 1♦ - Same as
Pin 2

Pin 2 - Internal
Connection-
Do Not Use•



Pin 3 - Cathode
Pin 5 - Plate
Pin 7 - Heater
Pin 8 - Heater

DAMPER SERVICE**Maximum Ratings, Design-Maximum Values:**

For operation in a 525-line, 30-frame system[□]

PEAK INVERSE PLATE VOLTAGE*	4400	max.	volts
PEAK PLATE CURRENT.	900	max.	ma
DC PLATE CURRENT.	155	max.	ma

o, ♦, •, □, *: See next page.

12D4



12D4

HALF-WAVE VACUUM RECTIFIER

PLATE DISSIPATION. 5.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 4400[▲] max. volts

Heater positive with respect to cathode. 300[#] max. volts

○ Without external shield.

◆ On the 5-pin bases, pin 1 as well as pins 4 and 6 is omitted.

● Socket terminals 1,2,4 and 6 should not be used as tie points.

□ As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.

* This rating is applicable when the duty cycle of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

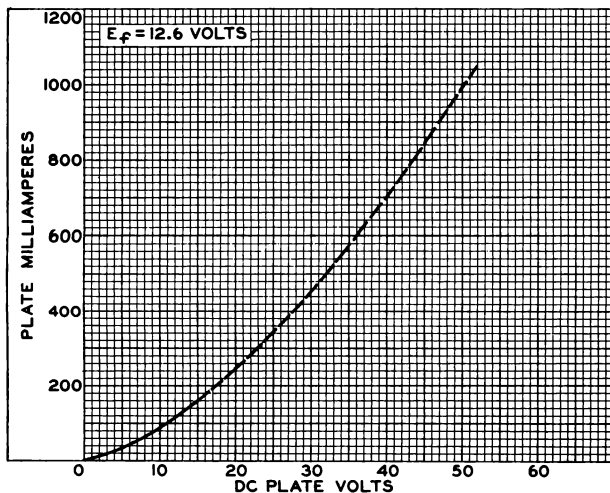
▲ The dc component must not exceed 900 volts.

The dc component must not exceed 100 volts.

4-59

TENTATIVE DATA

AVERAGE PLATE CHARACTERISTIC





12J8

12J8

TWIN DIODE—POWER TETRODE

9-PIN MINIATURE TYPE

For use in automobile radio receivers
operating directly from 12-volt storage batteries

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathodes:

Voltage range. 10 to 15.9 dc volts

*This voltage range is on an absolute basis. For longest
life, it is recommended that the heater be operated
within the voltage range of 11 to 14 volts*

Current (Approx.) at

12.6 volts 0.325 amp

Direct Interelectrode Capacitances:^o**Tetrode Unit:**Grid No.1 to plate 0.7 μ fGrid No.1 to cathode, grid No.2, and
heater 10.5 μ fPlate to cathode, grid No.2, and
heater 4.4 μ fTetrode grid No.1 to plate of diode unit No.1. 0.04 max. μ fTetrode grid No.1 to plate of diode unit No.2. 0.015 max. μ f**Mechanical:**

Operating Position Any

Maximum Overall Length 2-3/16"

Maximum Seated Length. 1-15/16"

Length, Base Seat to Bulb Top (Excluding tip) 1-9/16" $\pm$ 3/32"

Diameter 0.750" to 0.875"

Dimensional Outline. See General Section

Bulb T6-1/2

Base Small-Button Noval 9-Pin (JEDEC No.E9-1)

Basing Designation for BOTTOM VIEW 9G8

Pin 1—Grid No.1 of

Tetrode Unit

Pin 2—Cathode of

Tetrode Unit

Pin 3—Grid No.2 of

Tetrode Unit

Pin 4—Heater

Pin 5—Heater

Pin 6—Plate of

Tetrode Unit

Pin 7—Cathode of

Diode Units

Pin 8—Plate of Diode

Unit No.2

Pin 9—Plate of Diode

Unit No.1

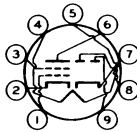
**TETRODE UNIT — AUDIO DRIVER****Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 30 max. volts

GRID-No.2 (SCREEN-GRID) VOLTAGE. 30 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 30 max. volts

Heater positive with respect to cathode. 30 max. volts

^o Without external shield.

12J8



12J8

TWIN DIODE—POWER TETRODE

Typical Operation with 12.6 Volts on Heater:

Plate Voltage.	12.6	volts
Grid-No.2 Voltage.	12.6	volts
Grid-No.1 (Control-Grid) Voltage.	0	volts
AF Grid-No.1 Voltage (RMS)	1.6	volts
Grid-No.1 Resistor	2.2	megohms
Grid-No.1-Resistor Bypass Capacitor.	1	μ f
Zero-Signal Plate Current.	12	ma
Zero-Signal Grid-No.2 Current.	1.5	ma
Transconductance.	5500	μ mhos
Plate Resistance (Approx.)	6000	ohms
Load Resistance.	2700	ohms
Total Harmonic Distortion.	5	%
Max.-Signal Power Output	20	mW

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	10 max.	megohms
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DIODE UNITS — Two

Maximum Ratings, Design-Center Values:

Values are for Each Unit

PLATE CURRENT.	5 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode. .	30 max.	volts
Heater positive with respect to cathode. .	30 max.	volts

Characteristics with 12.6 Volts on Heater:

	Diode Unit No.1	Diode Unit No.2	
Plate Current for plate volts = 5. .	8.5	12	ma



12H6

TWIN DIODE

**12H6
TO
12J7-GT**

Heater, for Unipotential Cathodes:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12H6 is the same as the 6H6 except for heater rating.

12J5-GT

MEDIUM-MU TRIODE

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12J5-GT is the same as the 6J5-GT except for heater rating and base. Base and connections for the 12J5-GT are the same as for the 6P5-GT.

12J7-GT

SHARP-CUTOFF PENTODE

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12J7-GT is the same as the 6J7-GT except for heater rating.

12K7-G.
TO
12Q7-GT



12K7-GT

REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathode:

Voltage	12.6		ac or dc volts
Current	0.15		amp

The 12K7-GT is the same as the 6K7-GT except for heater rating.

12K8

TRIODE-HEXODE CONVERTER

Heater, for Unipotential Cathode:

Voltage	12.6		ac or dc volts
Current	0.15		amp

The 12K8 is the same as the 6K8 except for heater rating.

12L6-GT

BEAM POWER TUBE

*Intended for use in equipment having
series heater-string arrangement*

The 12L6-GT is the same as the 25L6-GT except for the following items:

Heater, for Unipotential Cathode:

Voltage	12.6		ac or dc volts
Current	0.6		amp
Warm-up time (Average). . .	11		sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode .	300 max.	volts
Heater positive with respect to cathode .	200*max.	volts

▲ The dc component must not exceed 100 volts.

12Q7-GT

TWIN DIODE—HIGH-MU TRIODE

Heater, for Unipotential Cathode:

Voltage	12.6		ac or dc volts
Current	0.15		amp

The 12Q7-GT is the same as the 6Q7-GT except for heater rating.



12S8-GT

TRIPLE DIODE—HIGH-MU TRIODE

Heater, for Unipotential Cathodes:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12S8-GT is the same as the 6S8-GT except for heater rating.

12SA7, 12SA7-GT

PENTAGRID CONVERTER

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12SA7 and 12SA7-GT are the same as the 6SA7 and 6SA7-GT, respectively, except for heater rating.

12SC7

HIGH-MU TWIN TRIODE

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12SC7 is the same as the 6SC7 except for heater rating.

12SF5, 12SF5-GT

HIGH-MU TRIODE

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12SF5 and 12SF5-GT are the same as the 6SF5 and 6SF5-GT, respectively, except for heater rating.

12SF7
TO
12SJ7-GT



12SF7

DIODE—REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathode:

Voltage	12.6		ac or dc volts
Current	0.15		amp

The 12SF7 is the same as the 6SF7 except for heater rating.

12SG7

REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathode:

Voltage	12.6		ac or dc volts
Current	0.15		amp

The 12SG7 is the same as the 6SG7 except for heater rating.

12SH7

SHARP-CUTOFF PENTODE

Heater, for Unipotential Cathode:

Voltage	12.6		ac or dc volts
Current	0.15		amp

The 12SH7 is the same as the 6SH7 except for heater rating.

12SJ7, 12SJ7-GT

SHARP-CUTOFF PENTODE

Heater, for Unipotential Cathode:

Voltage	12.6		ac or dc volts
Current	0.15		amp

The 12SJ7 and 12SJ7-GT are the same as the 6SJ7 and 6SJ7-GT, respectively, except for heater rating.



12SK7
TO
12SR7

12SK7, 12SK7-GT REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathode:
Voltage 12.6 ac or dc volts
Current 0.15 amp
The 12SK7 and 12SK7-GT are the same as the 6SK7 and 6SK7-GT, respectively, except for heater rating.

12SL7-GT HIGH-MU TWIN TRIODE

Heater, for Unipotential Cathode:
Voltage 12.6 ac or dc volts
Current 0.15 amp
The 12SL7-GT is the same as the 6SL7-GT except for heater rating.

12SN7-GT MEDIUM-MU TWIN TRIODE

Heater, for Unipotential Cathodes:
Voltage 12.6 ac or dc volts
Current 0.30 amp
The 12SN7-GT is the same as the 6SN7-GT except for heater rating.

12SQ7, 12SQ7-GT TWIN DIODE—HIGH-MU TRIODE

Heater, for Unipotential Cathode:
Voltage 12.6 ac or dc volts
Current 0.15 amp
The 12SQ7 and 12SQ7-GT are the same as the 6SQ7 and 6SQ7-GT, respectively, except for heater rating.

12SR7 TWIN DIODE—MEDIUM-MU TRIODE

Heater, for Unipotential Cathode:
Voltage 12.6 ac or dc volts
Current 0.15 amp
The 12SR7 is the same as the 6SR7 except for heater rating.

12V6-GT
TO
12X4



12V6-GT BEAM POWER TUBE

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.225 amp

The 12V6-GT is the same as the 6V6-GT except for heater rating.

12W6-GT BEAM POWER TUBE

*Intended for use in equipment having
series heater-string arrangement*

The 12W6-GT is the same as the 6W6-GT except for the following items:

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.6 amp

Warm-up time (Average). . . 11 sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . 300 max. volts

12X4 HALF-WAVE VACUUM RECTIFIER

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.3 amp

The 12X4 is the same as the 6X4 except for heater rating.



12R5

BEAM POWER TUBE

7-PIN MINIATURE TYPE

*Intended for use in equipment having
series heater-string arrangement*

12R5

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	12.6	ac or dc volts
Current.	0.6	amp
Warm-up time (Average)	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate	0.55	μuf
Grid No.1 to cathode & grid No.3, grid No.2, and heater	13	μuf
Plate to cathode & grid No.3, grid No.2, and heater	9	μuf

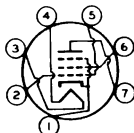
Characteristics, Class A₁ Amplifier:

Plate Voltage.	45	110	volts
Grid-No.2 (Screen-Grid) Voltage.	110	110	volts
Grid-No.1 (Control-Grid) Voltage	0	-8.5	volts
Plate Resistance (Approx.)	-	13000	ohms
Transconductance	-	7000	μmhos
Plate Current.	120*	40	ma
Grid-No.2 Current.	17*	3.3	ma
Grid-No.1 Voltage (Approx.) for plate ma. = 0.5	-	-22	volts

Mechanical:

Operating Position	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length.	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip).	2" $\pm$ 3/32"
Diameter	0.650" to 0.750"
Dimensional Outline.	See General Section
Bulb	T5-1/2
Base	Small-Button Miniature 7-Pin (JEDEC No.E7-1)
Basing Designation for BOTTOM VIEW	.7CV

Pin 1 - Cathode,
Grid No.3
Pin 2 - Grid No.1
Pin 3 - Heater



Pin 4 - Heater
Pin 5 - Grid No.1
Pin 6 - Grid No.2
Pin 7 - Plate

^o,*: See next page.



BEAM POWER TUBE

VERTICAL-DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	150 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum)*	1500 [■] max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	150 max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 (CONTROL- GRID) VOLTAGE	150 max.	volts
CATHODE CURRENT:		
Peak	155 max.	ma
DC	45 max.	ma
GRID-No.2 INPUT	1 max.	watt
PLATE DISSIPATION	4.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	300 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For cathode-bias operation 2.2 max. megohms

[□] Without external shield.

* This value can be measured by a method involving a recurrent wave form such that the maximum ratings of the tube will not be exceeded.

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.

* This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.

[■] Under no circumstances should this absolute value be exceeded.

[▲] The dc component must not exceed 100 volts.



14A4

MEDIUM-MU TRIODE

14A4
14A5

Heater, for Unipotential Cathode:

Voltage. 12.6[□] ac or dc volts

Current. 0.15^{□□} amp

The 14A4 is the same as the 7A4 except for heater rating.

[□] Nominal voltage = 14.0 volts.

^{□□} Nominal current = 0.16 ampere.

14A5

BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 12.6[□] ac or dc volts

Current. 0.15^{□□} amp

Direct Interelectrode Capacitances (Approx.):[○]

Grid No.1 to Plate 0.4 μf

Input. 6.8 μf

Output 7.0 μf

[○] With external shield connected to cathode.

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 6AA

Pin 1 - Heater

Pin 2 - Plate

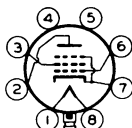
Pin 3 - Grid No.2

Pin 4 - No

Connection

Pin 5 - No

Connection



Pin 6 - Grid No.1

Pin 7 - Cathode,

Grid No.3

Pin 8 - Heater

Plug - Base
Shell

AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 300 max. volts

PLATE DISSIPATION. 7.5 max. watts

GRID-No.2 DISSIPATION. 1.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

[□] Nominal voltage = 14.0 volts.

^{□□} Nominal current = 0.16 ampere.

DEC. 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

14A5
14A7
14B6



14A5 BEAM POWER AMPLIFIER

(continued from preceding page)

Typical Operation and Characteristics:

Plate Voltage.	250	..	volts
Grid-No.2 Voltage.	250	..	volts
Grid-No.1 (Control-Grid) Voltage.	-12.5	..	volts
Cathode-Bias Resistor.	370	..	ohms
Peak AF Grid-No.1 Voltage.	12.5	..	volts
Zero-Signal Plate Current.	30	..	ma
Max.-Signal Plate Current.	32	..	ma
Zero-Signal Grid-No.2 Current.	3.5	..	ma
Max.-Signal Grid-No.2 Current.	5.5	..	ma
Plate Resistance (Approx.)	70000	..	ohms
Transconductance	3000	..	μ mhos
Load Resistance.	7500	..	ohms
Total Harmonic Distortion.	7	..	%
Max.-Sig. Power Output	2.8	..	watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:			
For fixed bias	0.1	..	megohm
For cathode bias	0.5	..	megohm

14A7 REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathode:

Voltage.	12.6 [□]	..	ac or dc volts
Current.	0.15 ^{□□}	..	amp

The 14A7 is the same as the 7A7 except for heater rating.

□ Nominal voltage = 14.0 volts. □□ Nominal current = 0.16 ampere.

14B6 TWIN DIODE—HIGH-MU TRIODE

Heater, for Unipotential Cathode:

Voltage.	12.6 [□]	..	ac or dc volts
Current.	0.15 ^{□□}	..	amp

The 14B6 is the same as the 7B6 except for heater rating.

□ Nominal voltage = 14.0 volts. □□ Nominal current = 0.16 ampere.



14AF7

MEDIUM-MU TWIN TRIODE

14AF7

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathodes:

Voltage. 12.6[□] ac or dc voltsCurrent. 0.15^{□□} ampDirect Interelectrode Capacitances:⁰

Each Unit:

Grid to Plate. 2.3 $\mu\mu\text{f}$ Grid to Cathode 2.2 $\mu\mu\text{f}$ Plate to Cathode 1.6 $\mu\mu\text{f}$ Grid of Unit No.1 to Grid of Unit No.2 0.20 max. $\mu\mu\text{f}$ Plate of Unit No.1 to Plate of Unit No.2. 0.60 max. $\mu\mu\text{f}$ Grid of Unit No.1 to Plate of Unit No.2. 0.06 max. $\mu\mu\text{f}$ Grid of Unit No.2 to Plate of Unit No.1. 0.10 max. $\mu\mu\text{f}$ ⁰ Without external shield.**Mechanical:**

Mounting Position. Any

Maximum Overall Length 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8AC

Pin 1-Heater

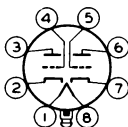
Pin 2-Cathode of
Triode No.2Pin 3-Plate of
Triode No.2Pin 4-Grid of
Triode No.2Pin 5-Grid of
Triode No.1Pin 6-Plate of
Triode No.1Pin 7-Cathode of
Triode No.1Pin 8-Heater
Plug - Base ShellAMPLIFIER - Class A₁*Values are for each unit***Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 300 max. volts

PLATE DISSIPATION. 2.5 max. watts

GRID VOLTAGE:

Positive bias value. 0 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

Typical Operation and Characteristics:

Plate Voltage. 100 100 250 volts

Grid Voltage. 0 - - volts

Cathode-Bias Resistor. - 600 1100 ohms

[□] Nominal voltage = 14.0 volts.^{□□} Nominal current = 0.16 ampere.

MAR. 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

14AF7
14B6



14AF7

MEDIUM-MU TWIN TRIODE

Amplification Factor	17	16	16	
Plate Resistance	6500	8400	7600	ohms
Transconductance	2600	1900	2100	μ mhos
Plate Current	10.8	5	9	ma

14B6

TWIN DIODE—HIGH-MU TRIODE

Heater, for Unipotential Cathode:

Voltage 12.6[□] ac or dc volts
Current 0.15^{□□} amp

The 14B6 is the same as the 7B6 except for heater rating.

[□] Nominal voltage = 14.0 volts. ^{□□} Nominal current = 0.16 ampere.

MAR. 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



14C7

SHARP-CUTOFF PENTODE

14C7

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 12.6[□] ac or dc voltsCurrent. 0.15^{□□} ampDirect Interelectrode Capacitances:⁰Grid No.1 to Plate 0.007 max. μmf Input. 6.0 μmf Output 6.5 μmf ⁰ With external shield connected to cathode.

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

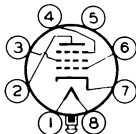
Basing Designation for BOTTOM VIEW 8V

Pin 1-Heater

Pin 2-Plate

Pin 3-Grid No.2

Pin 4-Grid No.3

Pin 5-Internal
Shield

Pin 6-Grid No.1

Pin 7-Cathode

Pin 8-Heater

Plug - Base
ShellAMPLIFIER-Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 100 max. volts

GRID-No.2 SUPPLY VOLTAGE 300 max. volts

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value. 0 max. volts

PLATE DISSIPATION. 1 max. watt

GRID-No.2 DISSIPATION. 0.1 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

Plate Voltage. 100 250 volts

Grid No.3. Connected to cathode at socket

Internal Shield Connected to cathode at socket

Grid-No.2 Voltage. 100 100 volts

Grid-No.1 Voltage. -1 -3 volts

Cathode-Bias Resistor. 130 100 ohms

Plate Resistance (Approx.) 0.1 # megohm

[□] Nominal voltage = 14.0 volts.^{□□} Nominal current = 0.16 ampere.

Greater than 1 megohm.

NOV. 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

14C7
TO
14H7



14C7 SHARP-CUTOFF PENTODE

(continued from preceding page)

Transconductance	2275	1575	μmhos
Grid-No.1 Bias (Approx.) for cathode-current cutoff. . .	-7	-7	volts
Plate Current.	5.7	2.2	ma
Grid-No.2 Current.	1.8	0.7	ma

14E6 TWIN DIODE—MEDIUM-MU TRIODE

Heater, for Unipotential Cathode:			
Voltage.	12.6 [□]		ac or dc volts
Current.	0.15 ^{□□}		amp
<i>The 14E6 is the same as the 7E6 except for heater rating.</i>			
□ Nominal voltage = 14.0 volts.	□□	Nominal current = 0.16 ampere.	

14E7 TWIN DIODE—REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathodes:			
Voltage.	12.6 [□]		ac or dc volts
Current.	0.15 ^{□□}		amp
<i>The 14E7 is the same as the 7E7 except for heater rating.</i>			
□ Nominal voltage = 14.0 volts.	□□	Nominal current = 0.16 ampere.	

14F7 HIGH-MU TWIN TRIODE

Heater, for Unipotential Cathodes:			
Voltage.	12.6 [□]		ac or dc volts
Current.	0.15 ^{□□}		amp
<i>The 14F7 is the same as the 7F7 except for heater rating.</i>			
□ Nominal voltage = 14.0 volts.	□□	Nominal current = 0.16 ampere.	

14F8 MEDIUM-MU TWIN TRIODE

Heater, for Unipotential Cathode:			
Voltage.	12.6 [□]		ac or dc volts
Current.	0.15 ^{□□}		amp
<i>The 14F8 is the same as the 7F8 except for heater rating.</i>			
□ Nominal voltage = 14.0 volts.	□□	Nominal current = 0.16 ampere.	

14H7 REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathode:			
Voltage.	12.6 [□]		ac or dc volts
Current.	0.15 ^{□□}		amp
<i>The 14H7 is the same as the 7H7 except for heater rating.</i>			
□ Nominal voltage = 14.0 volts.	□□	Nominal current = 0.16 ampere.	

NOV. 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



14J7

14J7
TO
14R7

TRIODE-HEPTODE CONVERTER

Heater, for Unipotential Cathode:

Voltage. 12.6[□] ac or dc volts

Current. 0.15^{□□} amp

The 14J7 is the same as the 7J7 except for heater rating.

□ Nominal voltage = 14.0 volts.

□□ Nominal current = 0.16 ampere.

14N7

MEDIUM-MU TWIN TRIODE

Heater, for Unipotential Cathodes:

Voltage. 12.6[□] ac or dc volts

Current. 0.3^{□□} amp

The 14N7 is the same as the 7N7 except for heater rating.

□ Nominal voltage = 14.0 volts.

□□ Nominal current = 0.32 ampere.

14Q7

PENTAGRID CONVERTER

Heater, for Unipotential Cathode:

Voltage. 12.6[□] ac or dc volts

Current. 0.15^{□□} amp

The 14Q7 is the same as the 7Q7 except for heater rating.

□ Nominal voltage = 14.0 volts.

□□ Nominal current = 0.16 ampere.

14R7

TWIN DIODE—REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathode:

Voltage. 12.6[□] ac or dc volts

Current. 0.15^{□□} amp

The 14R7 is the same as the 7R7 except for heater rating.

□ Nominal voltage = 14.0 volts.

□□ Nominal current = 0.16 ampere.



17AX4-GT
TO
17DE4

17AX4-GT HALF-WAVE VACUUM RECTIFIER

*Intended for TV damper service in equipment
having series heater-string arrangement*

The 17AX4-GT is the same as the 6AX4-GT except for the following items:

Heater, for Unipotential Cathode:

Voltage.	16.8		ac or dc volts
Current.	0.45		amp
Warm-up time (Average)*.	11		sec

17BQ6-GTB BEAM POWER TUBE

*Intended for use in equipment having
series heater-string arrangement*

The 17BQ6-GTB is the same as the 6BQ6-GTB/6CU6 except for the following items:

Heater, for Unipotential Cathode:

Voltage.	16.8		ac or dc volts
Current.	0.45		amp
Warm-up time (Average)*.	11		sec

17DE4 HALF-WAVE VACUUM RECTIFIER

*Intended for TV damper service in equipment
having series heater-string arrangement*

The 17DE4 is the same as the 6DE4 except for the following items:

Heater, for Unipotential Cathode:

Voltage.	17		ac or dc volts
Current.	0.6 ± 6%		amp
Warm-up time (Average)*.	11		sec

* For definition of heater warm-up time and method of determining it, see sheet **HEATER WARM-UP TIME MEASUREMENT** at front of this Section.

17DQ6-A



17DQ6-A

BEAM POWER TUBE

*Intended for use in equipment having
series heater-string arrangement*

The 17DQ6-A is the same as the 6DQ6-A except for the following items:

Heater, for Unipotential Cathode:

Voltage.	16.8		ac or dc volts
Current.	0.45		amp
Warm-up time (Average) .	11		sec.

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.



19BG6-G

19BG6-G BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 18.9 ac or dc volts

Current. 0.3 amp

Transconductance (Approx.) with plate

volts = 250, grid-No.2 volts = 250,

grid-No.1 volts = -15 6000 μ hos

Mu-Factor, Grid No.2 to Grid No.1 with

plate volts = 250, grid-No.2 volts = 250,

grid-No.1 volts = -20 8

Direct Interelectrode Capacitances:^o

Grid No.1 to Plate. 0.65 max. μ f

Input 11 μ f

Output. 6.5 μ f

^o With no external shield.

Mechanical:

Mounting Position . . Vertical, Base Up or Down; Horizontal,
with Plane of Pins 2 & 7 Vertical

Maximum Overall Length. 5-11/16"

Seated Length 4-31/32" $\pm$ 5/32"

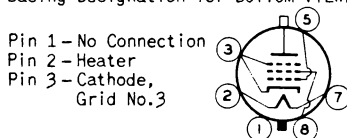
Maximum Diameter. 2-1/16"

Bulb. ST-16

Cap. Small

Base. Medium-Shell Octal 6-Pin

Basing Designation for BOTTOM VIEW. 5BT



Pin 1-No Connection

Pin 2-Heater

Pin 3-Cathode,
Grid No.3

Pin 5-Grid No.1

Pin 7-Heater

Pin 8-Grid No.2
Cap-Plate

HORIZONTAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system^o

DC PLATE VOLTAGE 700 max. volts

PEAK POSITIVE-PULSE PLATE VOLTAGE* 6000 max. volts

PEAK NEGATIVE-PULSE PLATE VOLTAGE -1500 max. volts

DC GRID-No.2 (SCREEN) VOLTAGE* 350 max. volts

DC GRID-No.1 (CONTROL-GRID) VOLTAGE. -50 max. volts

^o As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

* The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

• Preferably obtained through a series-dropping resistor of sufficient magnitude to limit the grid-No.2 input to the rated maximum value.

SEPT. 1, 1950

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

19BG6-G



19BG6-G BEAM POWER AMPLIFIER

PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE. . .	-400 max.	volts
DC PLATE CURRENT	100 max.	ma
GRID-No.2 INPUT.	3.2 max.	watts
PLATE DISSIPATION.	20 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	250 max.	volts
Heater positive with respect to cathode.	250 max.	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	1.0 max.	megohm
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SEPT. 1, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



19BG6-GA

BEAM POWER TUBE

19BG6-GA

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 18.9 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate 0.8 μmf

Grid No.1 to cathode & grid No.3,
grid No.2, and heater. 11 μmf

Plate to cathode & grid No.3,
grid No.2, and heater. 6 μmf

Characteristics, Class A₁ Amplifier:

Plate Voltage 60 250 volts

Grid-No.2 Voltage 250 250 volts

Grid-No.1 Voltage 0 -15 volts

Mu-Factor, Grid No.2 to Grid No.1 - 8

Plate Resistance (Approx.) - 25000 ohms

Transconductance - 6000 μmhos

Plate Current 180* 75 ma

Grid-No.2 Current 18* 4 ma

Grid-No.1 Voltage (Approx.) for
plate current of 1 ma - -45 volts

Mechanical:

Mounting Position Vertical, base up or down, or
Horizontal with pins 2 and 7 in vertical plane

Maximum Overall Length 5"

Seated Length 4-1/4" $\pm$ 3/16"

Maximum Diameter 1-9/16"

Bulb T-12

Cap. Small (JEDEC No.C1-1)

Base Short Medium-Shell Octal 8-Pin

with External Barriers, Style A (JEDEC No.B8-110),

or Short Medium-Shell Octal 8-Pin

with External Barriers, Style B (JEDEC No.B8-118)

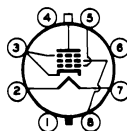
Basing Designation for BOTTOM VIEW5BT

Pin 1 - No Connec-
tion

Pin 2 - Heater

Pin 3 - Cathode,
Grid No.3

Pin 4 - Same as Pin 1



Pin 5 - Grid No.1

Pin 6 - Same as Pin 1

Pin 7 - Heater

Pin 8 - Grid No.2

Cap - Plate

^o Without external shield.

* These values can be measured by a method involving a recurrent wave form such that the cathode current and grid-No.2 input will be kept within ratings in order to prevent damage to the tube.

19BG6-GA



19BG6-GA **BEAM POWER TUBE**

HORIZONTAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	700	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum)*	6600 [■]	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500	max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	350	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE	300	max.	volts
CATHODE CURRENT:			
Peak	400	max.	ma
Average	110	max.	ma
GRID-No.2 INPUT	3.2	max.	watts
PLATE DISSIPATION†	20	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200	max.	volts
Heater positive with respect to cathode	200 [▲]	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)			
	210	max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For grid-resistor-bias operation† 0.47 max. megohm

□ As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

■ under no circumstances should this absolute value be exceeded.

• The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

† It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.

▲ The dc component must not exceed 100 volts.

CURVES

for Type 19BG6-GA are the same as those shown for
Type 6BG6-G



19J6

19J6 MEDIUM-MU TWIN TRIODE

MINIATURE TYPE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 18.9 ac or dc volts

Current. 0.15 amp

Direct Interelectrode Capacitances (Each unit, approx.):⁰Grid to Plate. 1.5 μf Grid to Cathode. 2.0 μf Plate to Cathode 0.4 μf ⁰ With no external shield.**Mechanical:**

Mounting Position. Any

Maximum Overall Length 2-1/8"

Maximum Seated Length. 1-7/8"

Length, Base Seat to Bulb Top (excluding tip) 1-1/2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

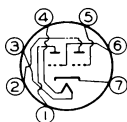
Base Small-Button Miniature 7-Pin

Basing Designation for BOTTOM VIEW 7BF

Pin 1-Plate of
Triode No.2Pin 2-Plate of
Triode No.1

Pin 3-Heater

Pin 4-Heater

Pin 5-Grid of
Triode No.1Pin 6-Grid of
Triode No.2

Pin 7-Cathode

AMPLIFIER - Class A₁*Values are for each unit***Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 300 max. volts

PLATE DISSIPATION. 1.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode. 90 max. volts

Characteristics:

Plate Voltage. 100 . . . volts

Cathode-Bias Resistor[▲] 50 $\diamond$. . ohms

Amplification Factor 38

Plate Resistance 7100 . . ohms

Transconductance 5300 μmhos

Plate Current. 8.5 . . . ma

Maximum Circuit Values (for maximum rated conditions):

Grid-Circuit Resistance:

For cathode-bias operation 0.5 max. megohm

[▲], $\diamond$: See next page.

NOV. 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

19J6



19J6

MEDIUM-MU TWIN TRIODE

MIXER SERVICE

Values are for each unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
PLATE DISSIPATION.	1.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode. .	90 max.	volts
Heater negative with respect to cathode. .	90 max.	volts

Characteristics:

Plate Voltage.	150 . .	volts
Cathode-Bias Resistor [▲]	810 [†] . .	ohms
Oscillator Peak Voltage.	3 . .	volts
Plate Resistance	10200 . .	ohms
Conversion Transconductance.	1900 . .	μmhos
Short-Circuit Input Conductance		
at 100 Mc	196 . .	μmhos
Plate Current.	4.8 . .	ma

Maximum Circuit Values (for maximum rated conditions):

Grid-Circuit Resistance:

For cathode-bias operation 0.5 max. megohm

[▲] operation with fixed bias is not recommended.[♦] value is for both units operating at the specified conditions.[†] For one unit, with other unit not operating. When both units are operating, the value of cathode-bias resistor is determined by the total cathode current of both units.

NOV. 15, 1948

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

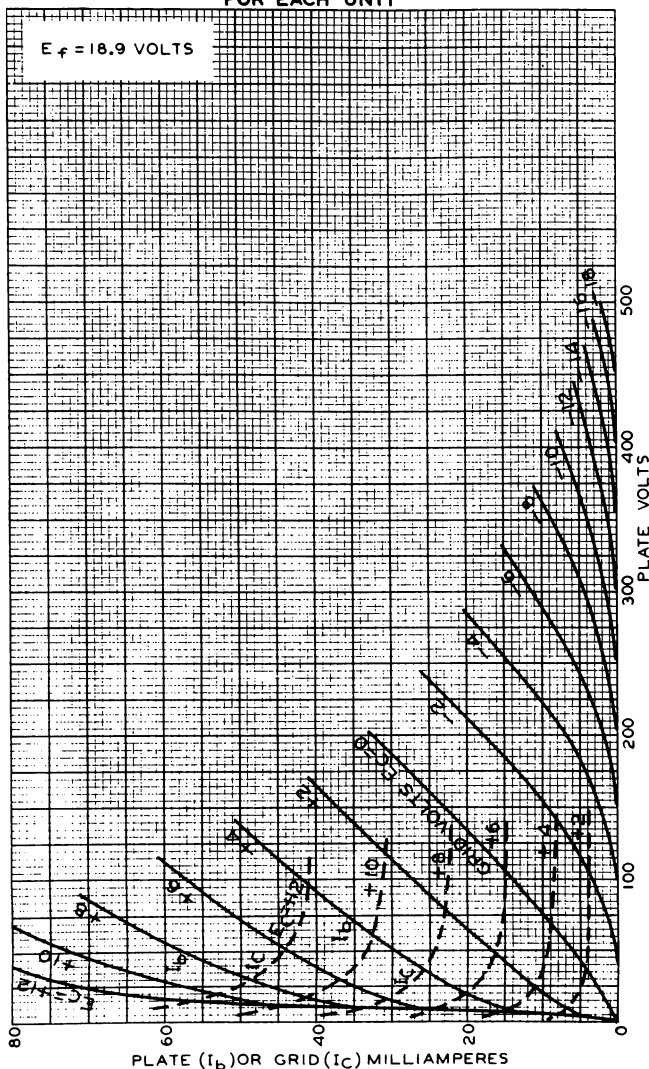


19J6

19J6

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT

$E_f = 18.9$ VOLTS



AUG. 18, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

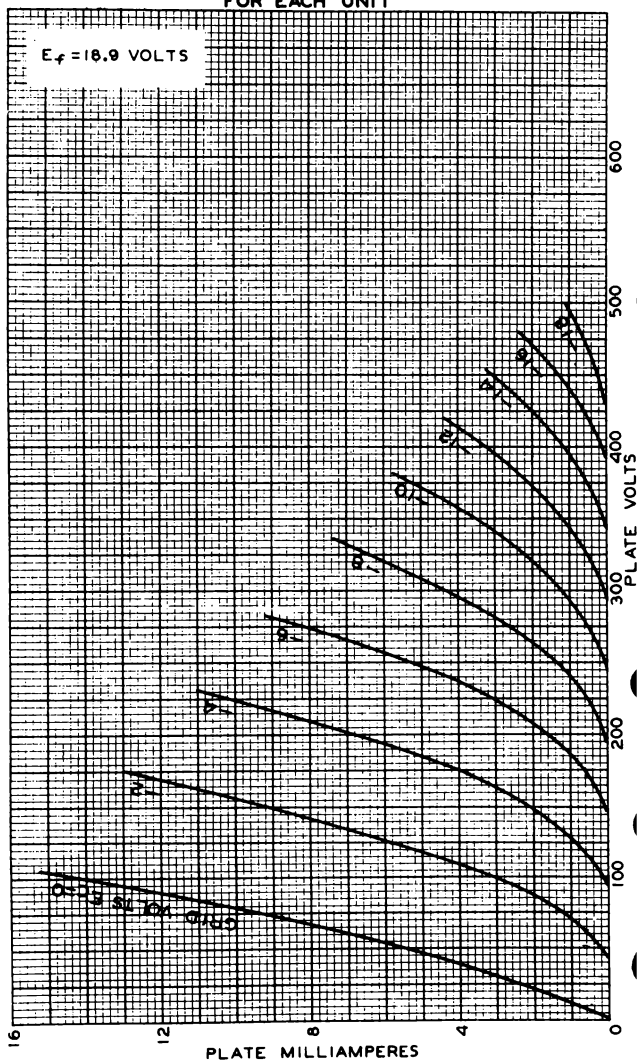
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19J6



19J6

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



AUG. 18, 1948

TUBE DEPARTMENT

92CM-7060

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



19T8

19T8
19X8

TRIPLE DIODE—HIGH-MU TRIODE

9-PIN MINIATURE TYPE

Heater, for Unipotential Cathode:

Voltage 18.9 ac or dc volts

Current 0.15 amp

The 19T8 is the same as the 6T8 except for heater rating.

19X8

TRIODE-PENTODE CONVERTER

9-PIN MINIATURE TYPE

Heater, for Unipotential Cathode:

Voltage 18.9 ac or dc volts

Current 0.15 amp

The 19X8 is the same as the 6X8 except for heater rating, but is intended primarily for use in "transformerless" AM/FM receivers whereas the 6X8 is intended for use in AM/FM receivers and in television receivers utilizing an intermediate frequency in the order of 40 Mc. Therefore, reference in the note (●) under the 6X8 to TV receivers does not apply to the 19X8.



24-A

24-A

SCREEN GRID R-F AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	2.5	a-c or d-c volts
Current	1.75	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	0.007 max.	μf
Input	5.3	μf
Output	10.5	μf
Overall Length	4-25/32" to 5-1/32"	
Maximum Diameter	1-13/16"	
Bulb	ST-14	
Cap	Small Metal	
Base	Medium 5-Pin	
Pin 1 - Heater	Pin 4 - Cathode	
Pin 2 - Plate	Pin 5 - Heater	
Pin 3 - Screen	Cap - Grid	
Mounting Position	Any	



BOTTOM VIEW

AMPLIFIER - Class A₁

Operating Conditions and Characteristics:		
Heater*	2.5	volts
Plate	180	250 $\square$ volts
Screen	90	90 max. volts
Grid	-3	-3 volts
Amp. Fact.	400	630
Plate Res.	400000	600000 ohms
Transcond.	1000	1050 μmhos
Plate Cur.	4	4 ma.
Screen Cur.	1.7	1.7 max. ma.

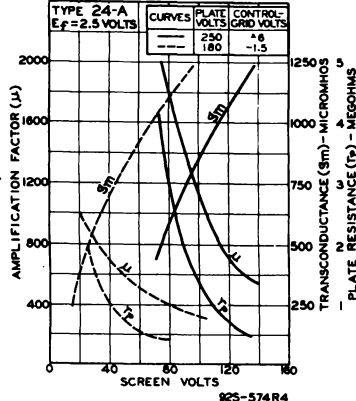
DETECTOR

Typical Operation:	Biased	Grid-Leak	
Heater *	2.5 $\square$	2.5	volts
Plate	250 $\square$	180 max.	volts
Screen	20 to 45	20 to 45	volts
Grid	-5 approx.	Return to Cathode ∇	volts
Plate Load	0.25 Δ	0.25 Δ	megohm
Plate Cur.	Adjusted to 0.1 ma. with no input signal $\blacksquare$	-	

- $\square$ Max. plate volts = 275.
- ∇ Conventional grid leak and condenser.
- Δ Or 500 h. choke shunted by 0.25 megohm. For resistance load, plate-supply voltage will be voltage at plate plus voltage drop in load caused by specified plate current.
- $\blacksquare$ With shield-can.
- Average plate current with normal maximum signal should be limited to 4.0 ma., as measured with a d-c meter.
- * In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

← Indicates a change.

AVERAGE CHARACTERISTICS



APRIL 3, 1939

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

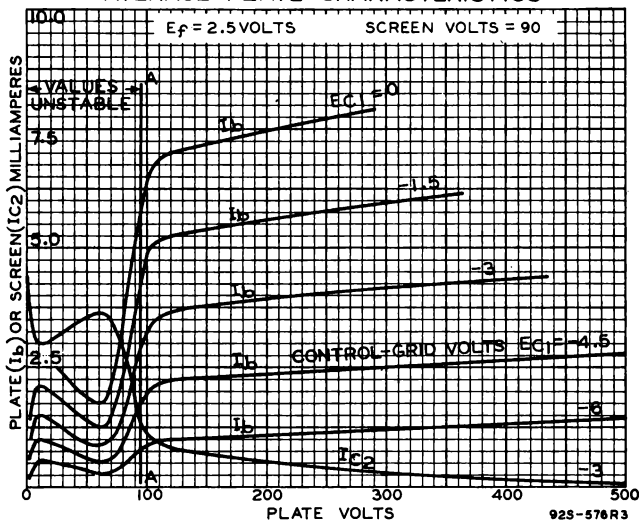
DATA

24-A

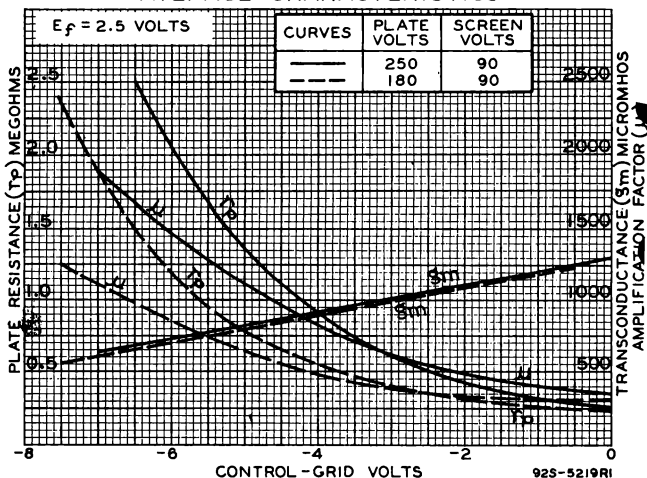


24-A

AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS



FEB. 14, 1939

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6027



25A6, 25A6-GT/G

25A6
25A6-GT/G

POWER AMPLIFIER PENTODE

Heater		Coated Unipotential Cathode	
Voltage	25	a-c or d-c volts	
Current	0.3	amp.	
	25A6	25A6-GT/G	
Direct Interelectrode Cap.	▲		
Grid to Plate	0.2	—	μf
Input	8.5	—	μf
Output	12.5	—	μf
Maximum Overall Length	3-1/4"	3-5/16"	
Maximum Seated Height	2-11/16"	2-3/4"	
Maximum Diameter	1-5/16"	1-5/16"	
Bulb	Metal Shell, MT-8		T-9
Base	{ Small Wafer	{ Intermed. Sh.	
	{ Octal 7-Pin	{ Octal 7-Pin	
Basing Designation	7S	G-7S	
Pin 1 { 25A6, Shell		Pin 5 - Grid	
Pin 1 { 25A6-GT/G, No Con.		Pin 7 - Heater	
Pin 2 - Heater		Pin 8 - Cathode,	
Pin 3 - Plate		Grid #3	
Pin 4 - Screen			
Mounting Position	Any		

BOTTOM VIEW

Maximum Ratings Are Design-Center Values

AMPLIFIER

Plate Voltage	160 max.	volts
Screen Voltage	135 max.	volts
Plate Dissipation	5.3 max.	watts
Screen Dissipation	1.9 max.	watts

Typical Operation and Characteristics- Class A₁ Amplifier:

Plate Voltage	95	135	160	volts
Screen Voltage	95	135	120	volts
Grid Voltage *	-15	-20	-18	volts
Peak A-F Grid Voltage	15	20	18	volts
Zero-Sig. Plate Current	20	37	33	ma.
Max.-Sig. Plate Current	22	39	36	ma.
Zero-Sig. Screen Current	4	8	6.5	ma.
Max.-Sig. Screen Current	8	14	12	ma.
Plate Resistance	45000	35000	42000	ohms
Transconductance	2000	2450	2375	μmhos
Load Resistance	4500	4000	5000	ohms
Total Harmonic Distortion	11	9	10	%
Max.-Sig. Power Output	0.9	2	2.2	watts

■ Heater-cathode bias should not exceed 90 volts d.c. as measured between negative heater terminal and cathode.

▲ With shell connected to cathode. Values are approximate.

* The d-c resistance in the grid circuit should not exceed 0.5 megohm with cathode bias. With fixed bias, the d-c resistance may be as high as 0.5 megohm for the 95-volt condition, but should be limited to 0.1 megohm for the 135-volt and 160-volt conditions.

Curves under Type 43 also apply to the 25A6 and 25A6-GT/G.

← Indicates a change.

Mar. 20, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

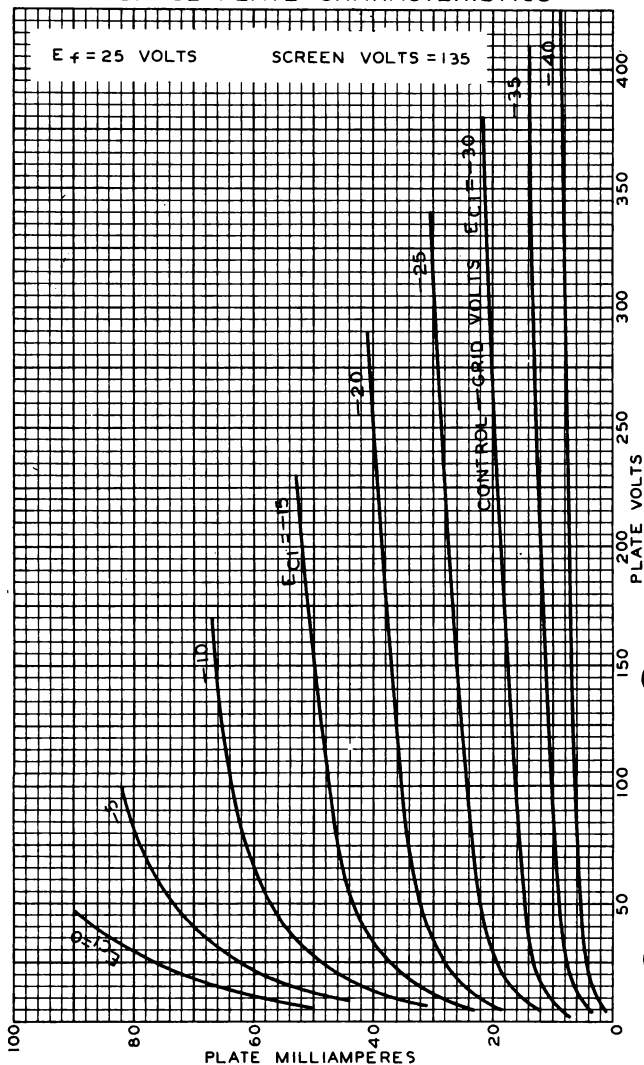
DATA

25A6



25A6

AVERAGE PLATE CHARACTERISTICS



JAN. 8, 1940

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92C-4559R1



25AC5-GT/G

HIGH-MU POWER AMPLIFIER TRIODE

Heater	Coated Unipotential Cathode	
Voltage	25	a-c or d-c volts
Current	0.3	amp.
Maximum Overall Length		3-5/16"
Maximum Seated Height		2-3/4"
Maximum Diameter		1-5/16"
Bulb		T-9
Base	Intermediate Shell Octal 6-Pin	
Pin 1 - No Connection	Pin 5 - Grid	
Pin 2 - Heater	Pin 7 - Heater	
Pin 3 - Plate	Pin 8 - Cathode	
Mounting Position	Any	



BOTTOM VIEW (G-6Q)

Maximum Ratings Are Design-Center Values

CHARACTERISTICS

Plate Voltage	110	volts
Grid Voltage	+15	volts
Amplification Factor	58	
Plate Resistance	15200	ohms
Transconductance	3800	μmhos
Plate Current	45	ma.
Grid Current	7	ma.

AMPLIFIER

Plate Voltage	180 max.	volts
Plate Dissipation	10 max.	watts

Typical Operation - Class B Power Amplifier:

Unless otherwise specified, values are for 2 tubes

Plate Voltage	180	volts
Grid Voltage	0	volts
Peak A-F Grid-to-Grid Voltage	60	volts
Zero-Signal D-C Plate Current	4	ma.
Effective Load Res. (plate-to-plate)	4800	ohms
Peak Power Input	810	mw.
Power Output	6	watts

Dynamic-Coupled Class A₁ Amplifier - With Driver as Indicated:

6AK5-GT/G 6P5-GT/G 37
As Driver As Driver As Driver

Plate-Supply Voltage	110	180	180	volts
Grid Voltage	▲	▲	▲	volts
Average Plate Current	45	27	37	ma.
Average Plate Current of Driver	7	4	5.3	ma.
Input Signal to Driver (RMS)*	22	12	17	volts
Driver Grid Resistor	1.0	1.0	1.0	max. megohm
Load Resistance	2000	8000	5000	ohms
Harmonic Distortion	10	10	10	%
Power Output	2.0	2.0	2.7	watts

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ Bias voltage for both 25AC5-GT/G and the driver is developed by the Dynamic-Coupled connection. The Dynamic-Coupled connection is illustrated under Type 6AC5-GT/G; the 25AC5-GT/G does not require the use of the 25000-ohm resistor.

* Current does not flow in the driver grid circuit during any part of the input cycle. Under maximum rated conditions, the total d-c resistance in the grid circuit of the driver should not exceed 1.0 megohm.

Mar. 20, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

25B5



25B5

DIRECT-COUPLED POWER AMPLIFIER

Heater ■	Coated Unipotential Cathode	
Voltage	25	a-c or d-c volts
Current	0.3	amp.
Maximum Overall Length		4-19/32"
Maximum Seated Height		3-31/32"
Maximum Diameter		1-9/16"
Bulb		ST-12
Base		Small 6-Pin
Pin 1 - Heater		Pin 4 - Input-Triode
Pin 2 - Output-Triode		Grid
Plate		Pin 5 - Output-Triode
Pin 3 - Input-Triode		Cathode
Plate		Pin 6 - Heater
Mounting Position	BOTTOM VIEW (6D)	Any



■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

*Maximum Ratings and Typical Operating Conditions
for the 25B5 are the same as those for Type 25N6-G.*

Mar. 20, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



25BQ6-GT

25BQ6-GT
BEAM POWER AMPLIFIER

Heater, for Unipotential Cathode:

Voltage. 25 ac or dc volts
Current. 0.3 amp

The 25BQ6-GT is the same as the 6BQ6-GT except for heater rating.



25BQ6-GTB/25CU6 BEAM POWER TUBE

25BQ6-
GTB

The 25BQ6-GTB/25CU6 is the same as the 6BQ6-GTB/6CU6 except for the following items:

Heater, for Unipotential Cathode:

Voltage.	25		ac or dc volts
Current.	0.3		amp

MAR. 1, 1955

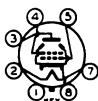
TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



BEAM POWER AMPLIFIER

Heater ■	Coated Unipotential Cathode	
Voltage	25	a-c or d-c volts
Current	0.3	amp.
Maximum Overall Length		4-5/8"
Maximum Seated Height		4-1/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium Shell Octal 7-Pin
Pin 1—No Connection		Pin 5—Grid
Pin 2—Heater		Pin 7—Heater
Pin 3—Plate		Pin 8—Cathode
Pin 4—Screen		
Mounting Position		Any



BOTTOM VIEW (G-7AC)

AMPLIFIER

Plate Voltage	200 max.	volts
Screen Voltage	135 max.	volts
Plate Dissipation	12.5 max.	watts
Screen Dissipation	1.75 max.	watts

Typical Operation and Characteristics—Class A₁ Amplifier:

Heater ■	25	25	volts
Plate	135	200	volts
Screen	135	135	volts
Grid ▲	-13.5	14	volts
Peak A-F Grid Voltage	13.5	14	volts
Zero-Sig. Plate Cur.	58	61	ma.
Max.—Sig. Plate Cur.	60	66	ma.
Zero-Sig. Screen Cur.	3.5	2.2	ma.
Max.—Sig. Screen Cur.	11.5	9.0	ma.
Plate Res. (Approx.)	9300	18300	ohms
Transcond.	7000	7100	μmhos
Load Res.	2000	2600	ohms
Total Harmonic Dist.	10	10	%
Max.—Sig. Power Output	3.6	6.0	watts

■ In circuits where the cathode is not connected directly to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ The type of input coupling should not introduce too much resistance in the grid circuit. Transformer- or impedance-input coupling devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not to exceed 0.5 megohm.

The curve under Type 6T6-G also applies to the 25C6-G.

May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



25CD6-GA

25CD6-GA BEAM POWER TUBE

*Intended for use in equipment having
series heater-string arrangement*

The 25CD6-GA is the same as the 6CD6-G except for the following items:

Heater, for Unipotential Cathode:

Voltage.	25	 ac or dc volts
Current.	0.6	 amp
Warm-up time (Average) .	11	 sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. .	200 max.	volts
Heater positive with respect to cathode. .	200 [▲] max.	volts

[▲] The dc component must not exceed 100 volts.



25L6-GT

BEAM POWER TUBE

25L6-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 25 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances:^o

Grid No.1 to plate 0.6 μ f

Grid No.1 to cathode & grid No.3,
grid No.2, and heater. 15 μ f

Plate to cathode & grid No.3,
grid No.2, and heater. 10 μ f

Mechanical:

Mounting Position. Any

Maximum Overall Length 3-5/16"

Maximum Seated Length. 2-3/4"

Maximum Diameter 1-9/32"

Bulb T-9

Base Intermediate-Shell Octal 7-Pin (JETEC No.87-7),
or Short Intermediate-Shell Octal 7-Pin
with External Barriers (JETEC No.87-59)

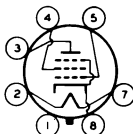
Basing Designation for BOTTOM VIEW 7AC

Pin 1 - No Con-
nection

Pin 2 - Heater

Pin 3 - Plate

Pin 4 - Grid No.2



Pin 5 - Grid No.1

Pin 7 - Heater

Pin 8 - Cathode,
Grid No.3

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 200 max. volts

GRID-No.2 (SCREEN) VOLTAGE 125 max. volts

PLATE DISSIPATION. 10 max. watts

GRID-No.2 INPUT. 1.25 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . . 150 max. volts

Heater positive with respect to cathode. . . 150 max. volts

Typical Operation and Characteristics:

Plate Voltage. 110 200 volts

Grid-No.2 Voltage. 110 125 volts

Grid-No.1 (Control-Grid) Voltage . . -7.5 0 volts

Peak AF Grid-No.1 Voltage. 7.5 8.5 volts

Cathode Resistor 0 180 ohms

Zero-Signal Plate Current. 49 46 ma

Max.-Signal Plate Current. 50 47 ma

Zero-Signal Grid-No.2 Current. 4 2.2 ma

^o Without external shield.

— Indicates a change.

MAY 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

25L6-GT



25L6-GT

BEAM POWER TUBE

Max.-Signal Grid-No.2 Current.	10	8.5	ma
Plate Resistance (Approx.)	13000	28000	ohms
Transconductance	8000	8000	μ mhos
Load Resistance.	2000	4000	ohms
Total Harmonic Distortion.	10	10	%
Max.-Signal Power Output	2.1	3.8	watts

Maximum Circuit Values (For maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max. megohm
For cathode-bias operation	0.5 max. megohm

Curves shown under Type 50L6-GT also apply to the 25L6-GT

MAY 1, 1955

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



25L6-GT

BEAM POWER AMPLIFIER

25L6-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 25 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances (Approx.):^oGrid No.1 to Plate . . . 0.8 μf Input 15 μf Output 10 μf ^o With no external shield.

Mechanical:

Mounting Position Any

Maximum Overall Length 3-5/16"

Maximum Seated Length 2-3/4"

Maximum Diameter 1-9/32" ←

Bulb T-9

Base Intermediate-Shell Octal 7-Pin

Basing Designation for BOTTOM VIEW G-7AC

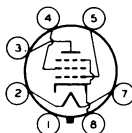
Pin 1—No

Connection

Pin 2—Heater

Pin 3—Plate

Pin 4—Grid No.2



Pin 5—Grid No.1

Pin 7—Heater

Pin 8—Cathode,
Grid No.3AF POWER AMPLIFIER—Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 200 max. volts ←

GRID-No.2 (SCREEN) VOLTAGE 125 max. volts ←

PLATE DISSIPATION 10 max. watts

GRID-No.2 INPUT 1.25 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . . 90 max. volts

Heater positive with respect to cathode . . 90 max. volts

Typical Operation and Characteristics: ←

Plate Voltage 110 200 volts

Grid-No.2 Voltage 110 125 volts

Grid-No.1 (Control-Grid) Voltage . . -7.5 - volts

Cathode-Bias Resistor - 180 ohms

Peak AF Grid-No.1 Voltage 7.5 8.5 volts

Zero-Signal Plate Current 49 46 ma

Max.-Signal Plate Current 50 47 ma

Zero-Signal Grid-No.2 Current 4 2.2 ma

Max.-Signal Grid-No.2 Current 10 8.5 ma

Plate Resistance (Approx.) 13000 28000 ohms

Transconductance 8000 8000 μmhos

Load Resistance 2000 4000 ohms

← Indicates a change.

FEB. 1, 1950

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

25L6-GT



25L6-GT

BEAM POWER AMPLIFIER

Total Harmonic Distortion	10	10	%
Max.-Signal Power Output. . . .	2.1	3.8	watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias.	0.1	megohm
For cathode bias.	0.5	megohm

Curves shown under Type 50L6-GT also apply to the 25L6-GT.

FEB. 1, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



25W4-GT

25W4-GT

HALF-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:

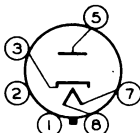
Heater, for Unipotential Cathode:

Voltage. 25 ac volts
Current. 0.3 amp

Mechanical:

Mounting Position. Any
Maximum Overall Length 3-5/16"
Maximum Seated Length. 2-3/4"
Maximum Diameter 1-9/32"
Bulb T-9
Base Intermediate-Shell Octal 6-Pin
Basing Designation for BOTTOM VIEW 4CG

Pin 1-No
Connection
Pin 2-No
Connection



Pin 3-Cathode
Pin 5-Plate
Pin 7-Heater
Pin 8-Heater

DAMPER SERVICE

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE 2000* max. volts
PEAK PLATE CURRENT 600 max. ma
DC PLATE CURRENT 125 max. ma
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode. 450 max. volts
Heater positive with respect to cathode. 100 max. volts

RECTIFIER SERVICE

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE 1250 max. volts
PEAK PLATE CURRENT 600 max. ma
HOT-SWITCHING TRANSIENT PLATE CURRENT
For duration of 0.2 second maximum . . . 3.5 max. amp
DC OUTPUT CURRENT 125 max. ma
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode. 450 max. volts
Heater positive with respect to cathode. 100 max. volts

* This rating is applicable where the duty cycle of the voltage pulse does not exceed 15 percent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15% of one horizontal scanning cycle is 10 microseconds.

25W4-GT



25W4-GT

HALF-WAVE VACUUM RECTIFIER

Typical Operation:	Half-Wave Rectifier		Full-Wave Rectifier
	(One Tube)	(Two Tubes)	
AC Plate-Supply Voltage (RMS) . .	350	-	volts
AC Plate-to-Plate Supply Voltage (RMS)	-	700	volts
Filter-Input Capacitor	20	20	μ f
Minimum Total Effective Plate-Supply Impedance Per Plate.	145	145	ohms
DC Output Current	125	250	ma
DC Output Voltage at Input to Filter (Approx.):			
At half-load cur.of { 62.5 ma.	390	-	volts
{ 125 ma.	-	395	volts
At full-load cur.of { 125 ma.	335	-	volts
{ 250 ma.	-	350	volts
Voltage Regulation (Approx.):			
Half-load to full-load current	55	45	volts

Curves shown under Type 6W4-GT also apply to the 25W4-GT

MARCH 1, 1951

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



25Z5



25Z5

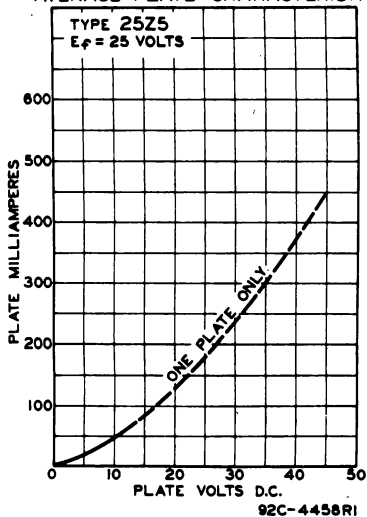
HIGH-VACUUM RECTIFIER-DOUBLER

Heater	Coated Unipotential Cathodes	
Voltage	25	a-c or d-c volts
Current	0.3	amp.
Maximum Overall Length		4-3/16"
Maximum Seated Height		3-9/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Base		Small 6-Pin
Pin 1-Heater		Pin 4-Cathode #1
Pin 2-Plate #2		Pin 5-Plate #1
Pin 3-Cathode #2		Pin 6-Heater
Mounting Position	BOTTOM VIEW (6E)	Any



Maximum Ratings, Typical Operating Conditions, and Curves are the same as those for Type 25B8.

In the design of "transformerless" receivers, a filter of condenser-input type is recommended for use with the 25Z5 in order to obtain a d-c output voltage as high as possible. A larger input capacitance, i.e., 16 μ f, is desirable for half-wave rectifier service, while a higher value is advantageous for voltage-doubler circuits. Since the peak voltage applied to the input condenser(s) is relatively low, it is possible to use condensers having moderate voltage rating (sufficient only for the line voltage). For rectifier and voltage-doubler circuits, see next page.

AVERAGE PLATE CHARACTERISTIC

← Indicates a change.

Sept. 2, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

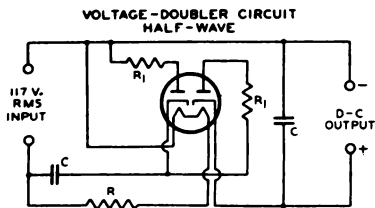
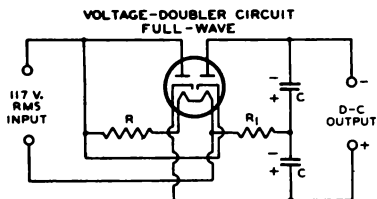
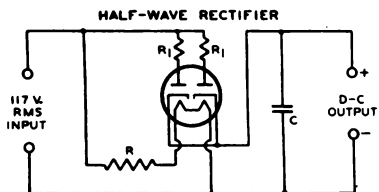
DATA

25Z5



25Z5

TYPICAL RECTIFIER-DOUBLER CIRCUITS



R = HEATERS OF OTHER TUBES IN SERIES
WITH VOLTAGE-DROPPING RESISTOR

R_1 = PROTECTIVE RESISTOR

C = CONDENSERS

The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.

Sept. 2, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

CIRCUITS



25Z6, 25Z6-GT/G

25Z6
25Z6-GT/G

HIGH-VACUUM RECTIFIER-DOUBLER

Heater		Coated Unipotential Cathodes	
Voltage	25	a-c or d-c volts	
Current	0.3	amp.	
	25Z6	25Z6-GT/G	
Maximum Overall Length	3-1/4"	3-5/16"	
Maximum Seated Height	2-11/16"	2-3/4"	
Maximum Diameter	1-5/16"	1-5/16"	
Bulb	Metal Shell, MT-8		
Base	{ Small Wafer		
Basing Designation	{ Octal 7-Pin		
Pin 1 { 25Z6, Shell	{ Intermed. Sh.		
Pin 2 { 25Z6-GT/G, No Con.	{ Octal 7-Pin		
Pin 2 - Heater	G-7Q		
Pin 3 - Plate #2	Pin 4 - Cathode #2		
Mounting Position	Pin 5 - Plate #1		
	Pin 7 - Heater		
	Pin 8 - Cathode #1		
	Any		



BOTTOM VIEW

Maximum Ratings Are Design-Center Values
RECTIFIER OR DOUBLER

Peak Inverse Plate Voltage	700 max. volts
Peak Plate Current per Plate	450 max. ma.
D-C Output Current per Plate	75 max. ma.
D-C Heater-Cathode Potential	350 max. volts

Typical Operation as Half-Wave Rectifier
with Condenser-Input Filter:*

Unless otherwise indicated, values are for both plates in parallel.

A-C Plate Supply Voltage				
per Plate (RMS)	117	150	235	volts
Filter Input Condenser	16	16	16	μf
Min. Total Effect. Plate-Supply Imped. per Plate	15	40	100	ohms
D-C Output Current per Plate	75	75	75	ma.
D-C Voltage (At input to filter):*				
At half-load current (75 ma.)	115	-	255	volts
At full-load current (150 ma.)	80	-	200	volts
Difference (Voltage Regulation)	35	-	55	volts
Percentage Regulation	30	-	22	%

Typical Operation as Voltage Doubler:

	Half-Wave	Full-Wave	
A-C Plate Supply Voltage			
per Plate (RMS)	117	117	volts
Filter Input Condenser (Each)	16	16	μf
Min. Total Effect. Plate-Supply Imped. per Plate	30	15	ohms
D-C Output Current	75	75	ma.
D-C Voltage (At input to filter):*			
At half-load current (37.5 ma.)	-	250	volts
At full-load current (75 ma.)	-	205	volts
Difference (Voltage Regulation)	-	45	volts
Percentage Regulation	-	18	%

* In half-wave rectifier service, the two units may be used separately or in parallel.

* Approximate values.

Circuits and Plate Characteristic Curve for the 25Z6
and 25Z6-GT/G are the same as for Type 25Z5.

Mar. 20, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

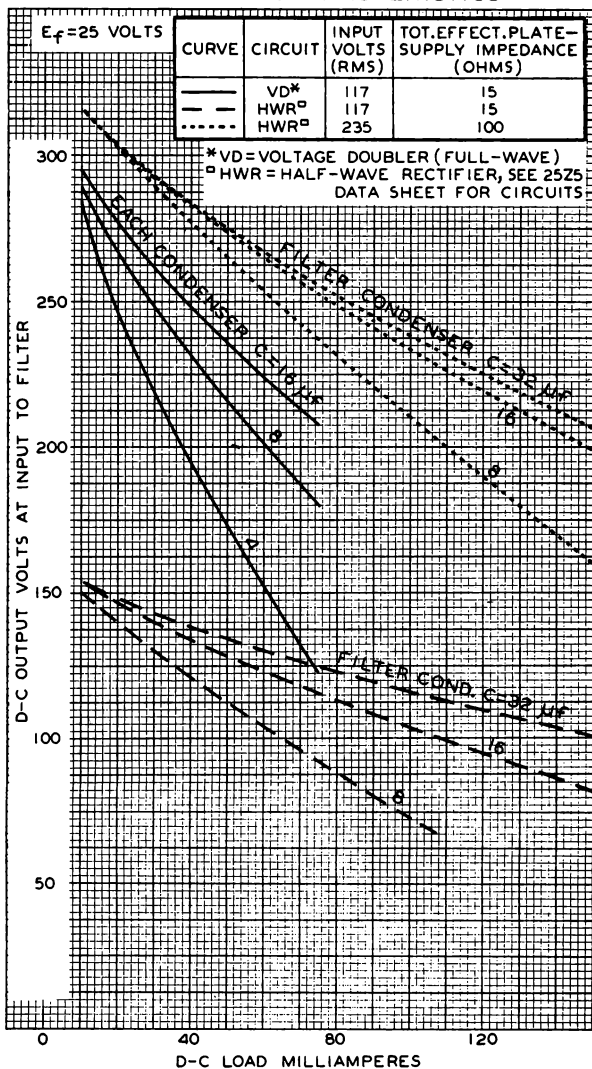
DATA

25Z6



25Z6

OPERATION CHARACTERISTICS



NOV. 27, 1939

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92C-4603 R2

RCA-26

AMPLIFIER

A-C FILAMENT

Filament	Coated	
Voltage	1.5	a-c or d-c volts
Current	1.05	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	8.1	μf
Grid to Filament	2.8	μf
Plate to Filament	2.5	μf
Maximum Overall Length		4-11/16"
Maximum Diameter		1-13/16"
Bulb	(2) (3)	ST-14
Base		Medium 4-Pin
Pin 1-Filament	(1) (4)	Pin 3-Grid
Pin 2-Plate		Pin 4-Filament

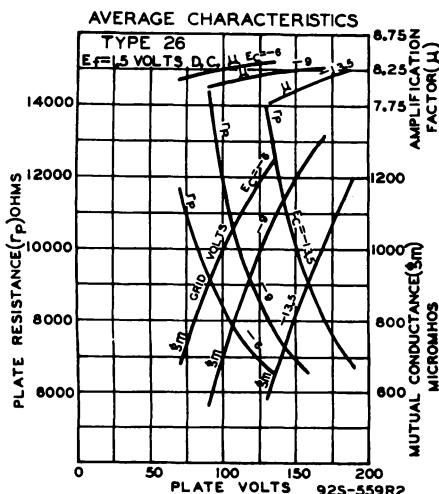
BOTTOM VIEW

AMPLIFIER (Class A)

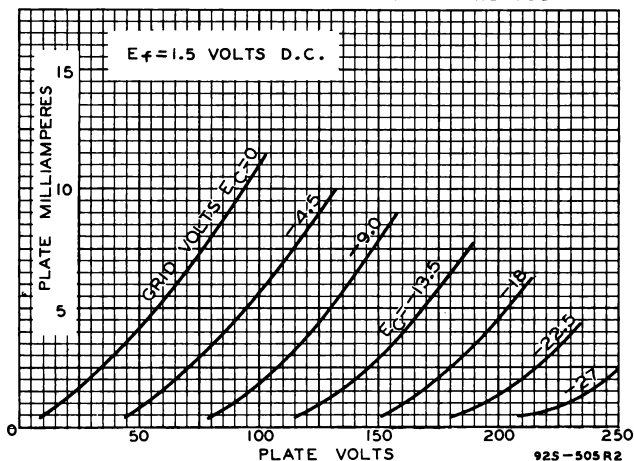
Operating Conditions and Characteristics:

Filament	1.5	1.5	1.5	a-c volts
Plate	90	135	180 max.	volts
Grid*	-7	-10	-14.5	volts
Amp. Fact.	8.3	8.3	8.3	
Plate Res.	8900	7600	7300	ohms
Mut. Cond.	935	1400	1450	μmhos
Plate Cur.	2.9	5.5	6.2	ma.

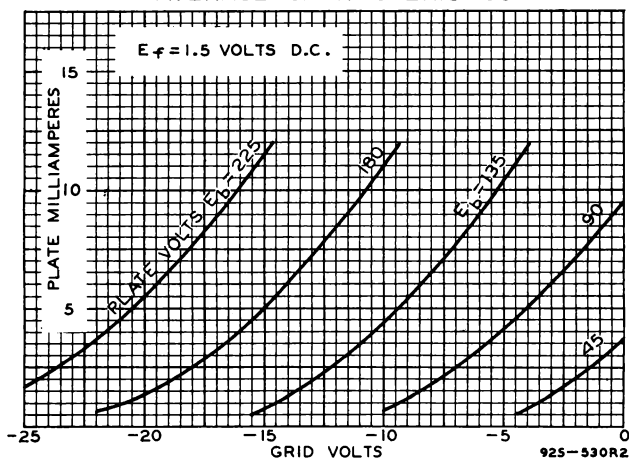
* Grid volts measured from mid-point of a-c operated filament.



AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS



RCA-27 DETECTOR, AMPLIFIER

Coated Uni-potential Cathode		
Heater Voltage	2.5	a-c or d-c volts
Current	1.75	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	3.3	μf
Grid to Cathode	3.1	μf
Plate to Cathode	2.3	μf
Maximum Overall Length	(3)	4-1/4"
Maximum Diameter		1-9/16"
Bulb		ST-12
Base	(2) (4)	Medium 5-Pin
Pin 1-Heater		Pin 4-Cathode
Pin 2-Plate	(1) (5)	Pin 5-Heater
Pin 3-Grid		

BOTTOM VIEW AMPLIFIER (Class A)

Operating Conditions and Characteristics:					
Heater *	2.5	2.5	2.5	2.5	volts
Plate	90	135	180	250	275 max. volts
Grid	-6	-9	-13.5	-21	volts
Amp. Fact.	9	9	9	9	
Plate Res.	11000	9000	9000	9250	ohms
Mut. Cond.	820	1000	1000	975	μmhos
Plate Cur.	2.7	4.5	5.0	5.2	ma.

Grid-coupling resistor, if used, should not exceed 1.0 megohm.

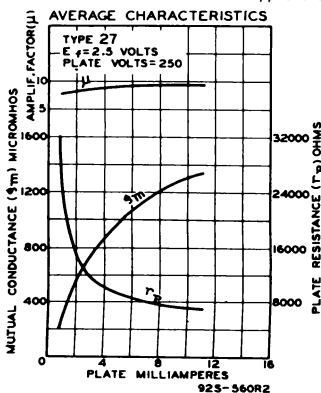
DETECTOR

Typical Operation:	Biased	Grid-Leak	
Heater *	2.5	2.5	volts
Plate	250	275 max.	volts
Grid	-30*	-33*	Return to Cathode volts
Plate Cur. ^o	Adjusted to 0.2 ma. with no input signal		-
Grid Leak	-	-	1 to 5 megohms
Grid Condenser	-	-	0.00025 μf

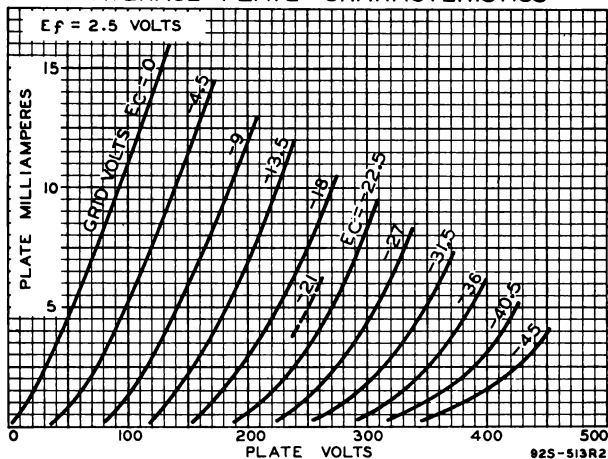
^o Max-Signal d-c plate current should be limited to 5.0 ma.

* Recommended practice is to connect the cathode directly to a mid-tap on the heater winding. If this practice is not followed, the potential difference between heater and cathode should be kept as low as possible.

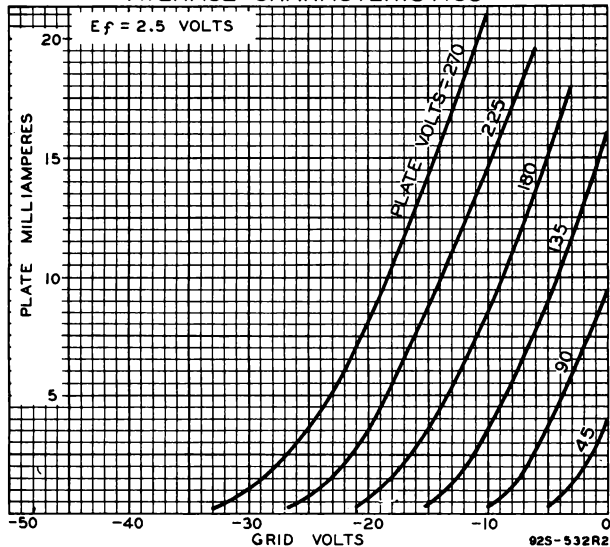
* Approximate.



AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS



RCA-31 POWER AMPLIFIER

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.130	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	5.7	μ f
Grid to Filament	3.5	μ f
Plate to Filament	2.7	μ f
Maximum Overall Length		4-1/4"
Maximum Diameter	(2) (3)	1-9/16"
Bulb		ST-12
Base		Small 4-Pin
Pin 1-Filament+	(1) (4)	Pin 3-Grid
Pin 2-Plate		Pin 4-Filament-

BOTTOM VIEW

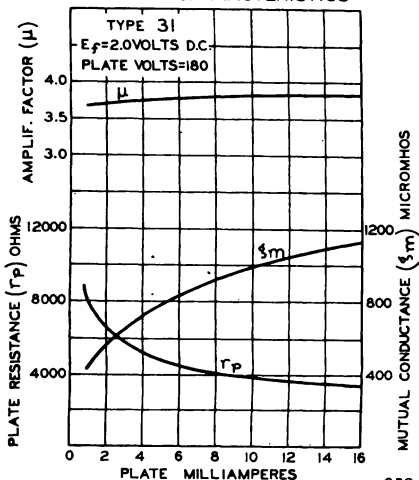
AMPLIFIER (Class A)

Operating Conditions and Characteristics:

Filament	2.0	2.0	d-c volts
Plate	135	180	volts
Grid	-22.5	-30	volts
Amp. Factor	3.8	3.8	
Plate Res.	4100	3600	ohms
Mut. Cond.	925	1050	μ mhos
Plate Cur.	8.0	12.3	ma.
Load Res.	7000	5700	ohms
Self-Bias Res.	2815	2440	ohms
U.P.O.	185	375	mw.

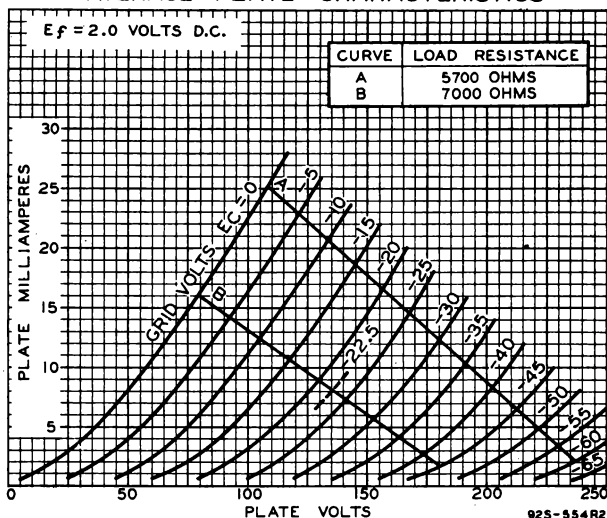
Full or partial self-biasing is to be preferred; required if grid resistor (maximum value 1.0 megohm) is used.

AVERAGE CHARACTERISTICS

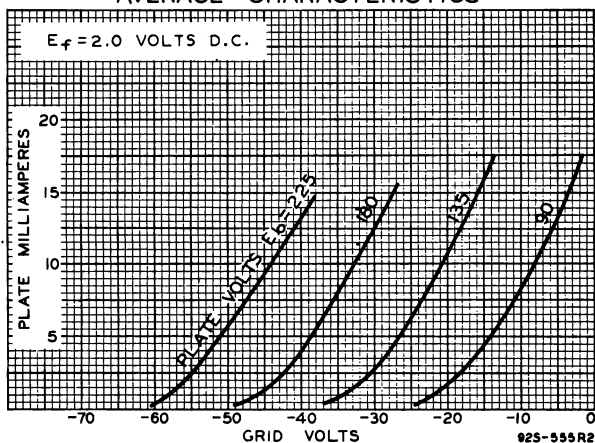


92S-562R2

AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS



RCA-32

SCREEN GRID R-F AMPLIFIER

Filament	Coated		
Voltage	2.0		d-c volts
Current	0.060		amp.
Direct Interelectrode Capacitances:			
Grid to Plate (with shield-can)		0.015 max.	μf
Input		5.3	μf
Output		10.5	μf
Overall Length	(2)	(3)	4-25/32" to 5-1/32"
Maximum Diameter			1-13/16"
Bulb			ST-14
Cap			Small Metal
Base			Medium 4-Pin
Pin 1-Filament +	(1)	(4)	Pin 4-Filament-
Pin 2-Plate			Cap
Pin 3-Screen			-Grid

BOTTOM VIEW

AMPLIFIER (Class A)

Operating Conditions and Characteristics:			
Filament	2.0	2.0	volts
Plate	135	180	volts
Screen	67.5	67.5 max.	max. volts
Grid	-3	-3	volts
Amp. Fact.	610	780	
Plate Res.	0.95	1.2	megohms
Mut. Cond.	640	650	μmhos
Plate Cur.	1.7	1.7	ma.
Screen Cur.	0.4	0.4	max. ma.

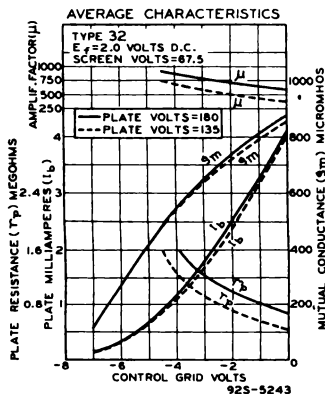
Grid-coupling resistor, if used, should not exceed 2.0 megohms.

DETECTOR

Typical Operation:	Biased	Grid-Leak	
Filament	2.0	2.0	volts
Plate-Supply	135	135	volts
Screen	45	67.5 max.	volts
Grid	-4.5*	-6*	Return to (+) Fil. volts
Plate Load	0.1*	0.1*	0.1 megohm
Plate Cur.	Adjusted to 0.2 ma.		
	with no input signal.		
Grid Leak	-	-	1-5 megohms
Grid Condenser	-	-	0.00025 μf

* Or equivalent impedance. In designing circuits to use the 32 as a detector, it is desirable to work from the detector stage directly into the power output stage.

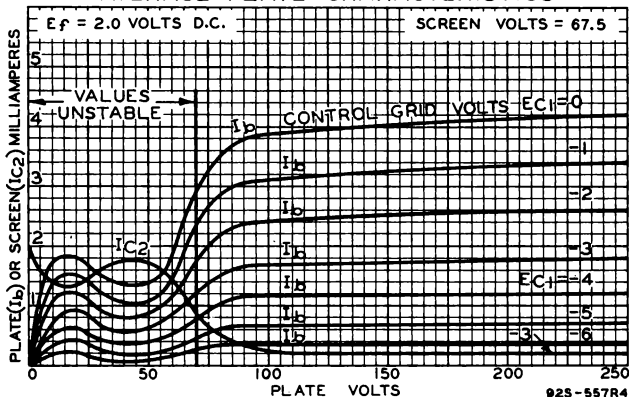
* Approximate.



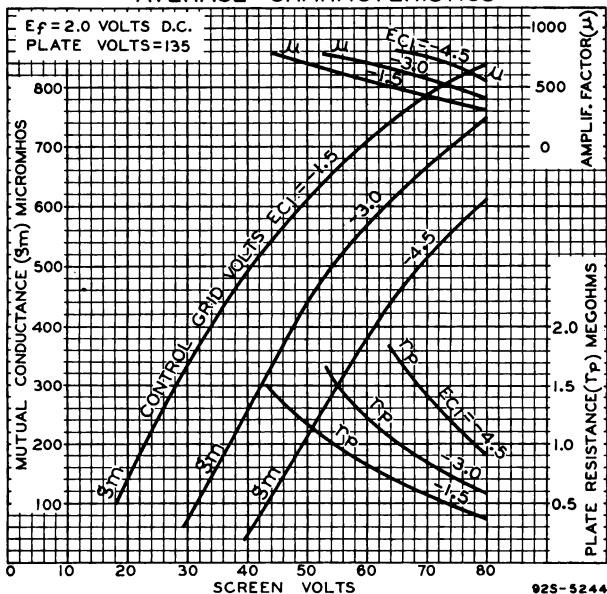
32

Runningham **Radiotron** RCA-32

AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS



SEPT. 9, 1935

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-4472

POWER AMPLIFIER PENTODE

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.260	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	1.0	μf
Input	8.0	μf
Output	12.0	μf
Maximum Overall Length		4-11/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium 5-Pin
Pin 1-Filament +	②	Pin 4-Screen
Pin 2-Plate	④	Pin 5-Filament -
Pin 3-Grid	① ⑤	

BOTTOM VIEW

AMPLIFIER (Class A)

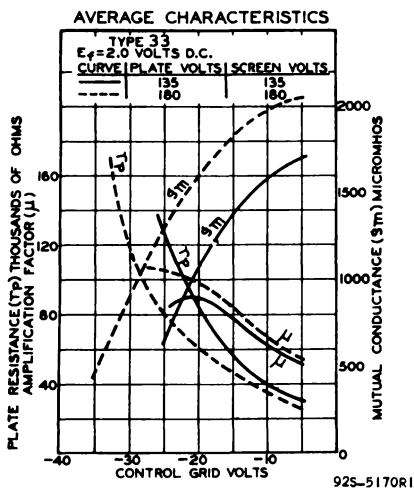
Operating Conditions and Characteristics:			
Filament	2.0	2.0	d-c volts
Plate	135	<u>180 max.</u>	volts
Screen	135	<u>180 max.</u>	volts
Grid	-13.5	-18	volts
Amp. Fact.	70	90	approx.
Plate Res.	50000	55000	approx. ohms
Mut. Cond.	1450	1700	μmhos
Plate Cur.	14.5	22	ma.
Screen Cur.	3	5	ma.
Load Res.	7000	6000	ohms
P.O. ^o	0.7	1.4	watts

^o 7% total harmonic distortion.

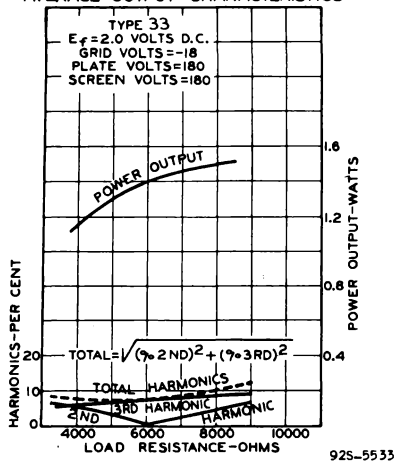
If a single 33 is self-biased, the self-biasing resistor (770 ohms for 135 volts, or 670 ohms for 180 volts) should be shunted by a suitable filter network to avoid degenerative effects at low audio frequencies. With two 33's in push-pull, the filter network may be omitted across the resistor (one-half of the values for a single tube).

Transformer or impedance input-coupling devices are recommended. If, however, resistance coupling is employed the grid resistor with self-bias should not exceed one megohm; without self-bias, it should be limited to 0.5 megohm.

AVERAGE CHARACTERISTICS



AVERAGE OUTPUT CHARACTERISTICS



AVERAGE PLATE CHARACTERISTICS

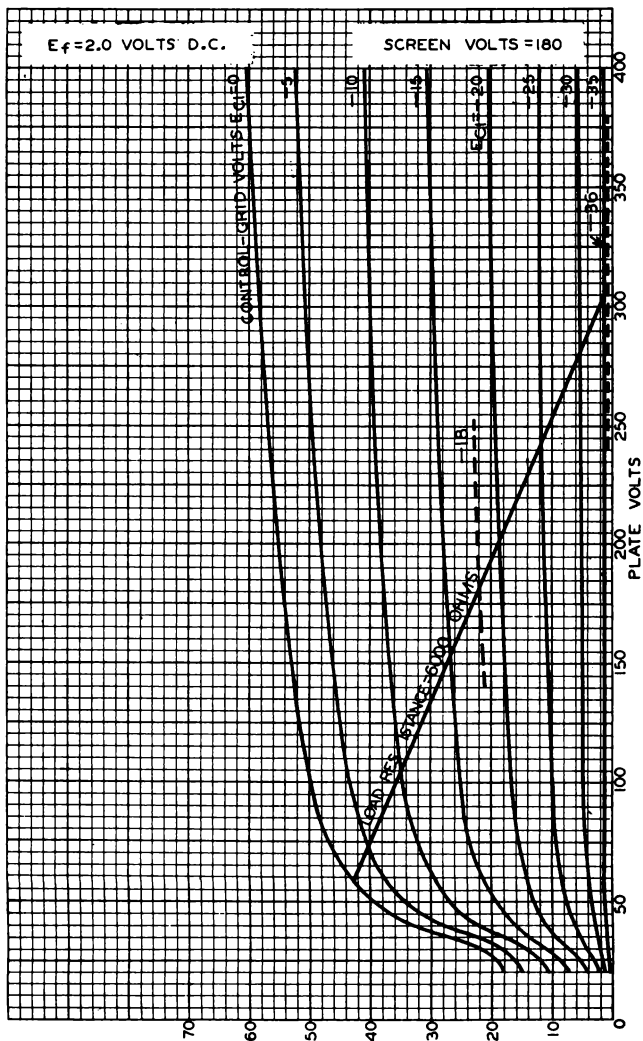


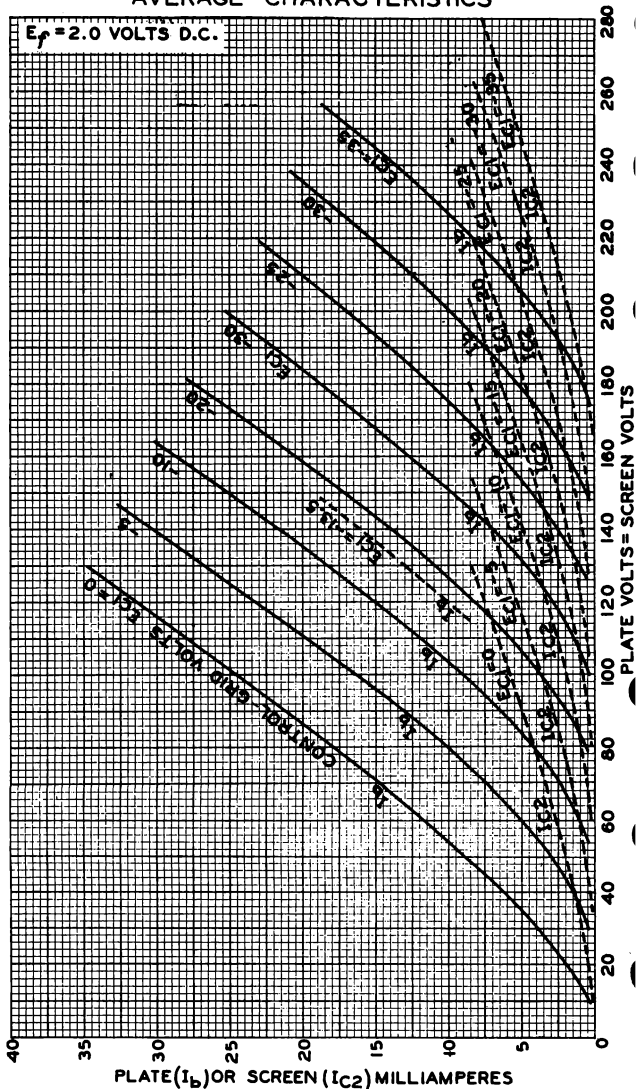
PLATE MILLIAMPERES

JAN. 1, 1934

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

925-5440

AVERAGE CHARACTERISTICS



MAY 5, 1932

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92S-5169

RCA-34

SUPER-CONTROL R-F AMPLIFIER PENTODE

Filament Voltage	Coated	
Current	2.0	d-c volts
	0.060	amp.
Direct Interelectrode Capacitances:		
Grid to Plate (with shield-can)	0.015 max.	μuf
Input	6.0	μuf
Output	11.5	μuf
Overall Length	4-25/32" to 5-1/32"	
Maximum Diameter	1-13/16"	
Bulb	ST-14	
Cap	Small Metal	
Base	Medium 4-Pin	
Pin 1-Filament+	Pin 4-Filament-	
Pin 2-Plate	Cap -Grid	
Pin 3-Screen		

BOTTOM VIEW

AMPLIFIER (Class A)

Operating Conditions and Characteristics:

Filament	2.0	2.0	2.0	d-c volts
Plate	67.5	135	180 max.	volts
Screen	67.5	67.5	67.5	max. volts
Grid	-3	-3	-3	min. volts
Amp. Fact.	224	360	620	
Plate Res.	400000	600000	1000000	ohms
Mut. Cond.	560	600	620	μmhos
Mut. Cond. *	15	15	15	μmhos
Plate Cur.	2.7	2.8	2.8	ma.
Screen Cur.	1.1	1.0	1.0	ma.

* At -22.5 volts bias.

MIXER

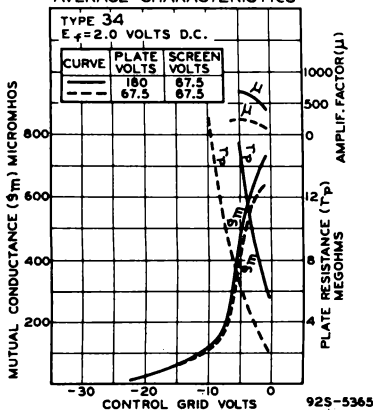
In Superheterodyne Circuits

Operating Conditions with Variable Bias:

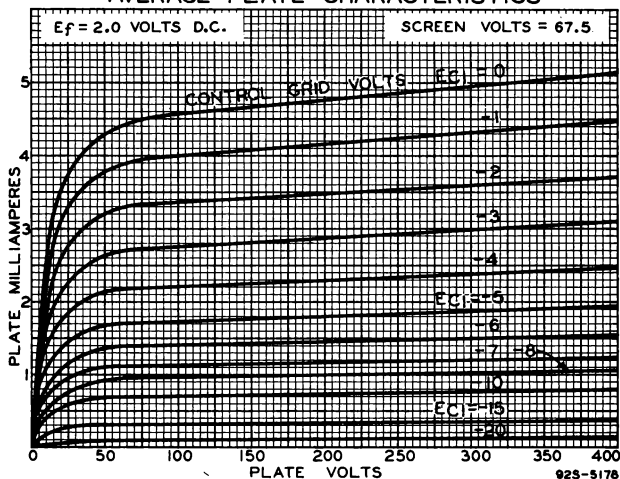
Filament	2.0	2.0	2.0	d-c volts
Plate	67.5	135	180 max.	volts
Screen	67.5	67.5	67.5	max. volts
Grid	-5	-5	-5	approx. volts

The grid bias shown is minimum for an oscillator peak voltage of 4.0 volts. These values are optimum.

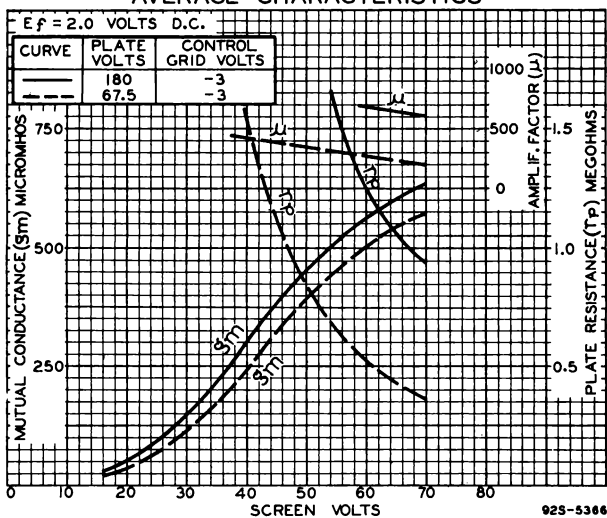
AVERAGE CHARACTERISTICS



AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS





35A5

BEAM POWER AMPLIFIER

35A5

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 35.0 ac or dc volts
Current. 0.15 amp

Mechanical:

Mounting Position. Any
Maximum Overall Length 3-5/32"
Maximum Seated Length. 2-5/8"
Maximum Diameter 1-3/16"
Bulb T-9
Base Lock-in 8-Pin
Basing Designation for BOTTOM VIEW 6AA

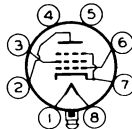
Pin 1-Heater

Pin 2-Plate

Pin 3-Grid No.2

Pin 4-No
Connection

Pin 5-No
Connection



Pin 6-Grid No.1

Pin 7-Cathode,

Grid No.3

Pin 8-Heater

Plug -Base
Shell

AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 200 max. volts
GRID-No.2 (SCREEN) VOLTAGE 125 max. volts
PLATE DISSIPATION. 8.5 max. watts
GRID-No.2 DISSIPATION. 1.0 max. watt
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode. 90 max. volts
Heater positive with respect to cathode. 90 max. volts

Typical Operation and Characteristics:

Plate Voltage. 110 200 . . volts
Grid-No.2 Voltage 110 110 . . volts
Grid-No.1 (Control-Grid) Voltage . . -7.5 -8 . . volts
Zero-Signal Plate Current. 40 41 . . ma.
Max.-Signal Plate Current. 41 44 . . ma.
Zero-Signal Grid-No.2 Current. . . . 3.0 2.0 . . ma.
Max.-Signal Grid-No.2 Current. . . . 7.0 7.0 . . ma.
Plate Resistance (Approx.) 16000 40000 . . ohms
Transconductance 5800 5900 . . μ mhos
Load Resistance. 2500 4500 . . ohms
Total Harmonic Distortion. 10 10 . . %
Max.-Sig. Power Output 1.5 3.3 . . watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias 0.1 . . megohm
For cathode bias 0.5 . . megohm

JUNE 20, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



35B5

BEAM POWER AMPLIFIER

MINIATURE TYPE

35B5

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 35 ac or dc volts

Current. 0.15 amp

Direct Interelectrode Capacitances (Approx.):⁰Grid No.1 to Plate 0.4 μf Input. 11 μf Output 6.5 μf ⁰ With no external shield.**Mechanical:**

Mounting Position. Any

Maximum Overall Length 2-5/8"

Maximum Seated Length. 2-3/8"

Length from Base Seat to Bulb Top (excluding tip). . . 2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

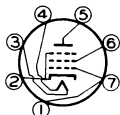
Base Miniature Button 7-Pin

Basing Designation for BOTTOM VIEW 7BZ

Pin 1-Grid No.1

Pin 2-Cathode,
Grid No.3

Pin 3-Heater



Pin 4-Heater

Pin 5-Plate

Pin 6-Grid No.2

Pin 7-Grid No.1

AF POWER AMPLIFIER - Class A₁**Maximum Ratings; Design-Center Values:**

PLATE VOLTAGE. 117 max. volts

GRID-No.2 (SCREEN) VOLTAGE 117 max. volts

PLATE DISSIPATION. 4.5 max. watts

GRID-No.2 DISSIPATION. 1.0 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 150 max. volts

Heater positive with respect to cathode 150 max. volts

Typical Operation and Characteristics:

Plate Voltage. 110 . . . volts

Grid-No.2 Voltage. 110 . . . volts

Grid-No.1 (Control-Grid) Voltage -7.5 . . . volts

Peak AF Grid-No.1 Voltage. 7.5 . . . volts

Zero-Signal Plate Current. 40 . . . ma.

Max.-Signal Plate Current. 41 . . . ma.

Zero-Signal Grid-No.2 Current. 3 . . . ma.

Max.-Signal Grid-No.2 Current. 7 . . . ma.

DEC. 20, 1946

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

35B5



35B5

BEAM POWER AMPLIFIER

Transconductance	5800	..	μ mhos
Load Resistance.	2500	..	ohms
Total Harmonic Distortion.	10	..	%
Max.-Signal Power Output	1.5	..	watts

Maximum Circuit Values (*for maximum rated conditions*):

Grid-No.1-Circuit Res. {	fixed bias . .	0.1	..	megohm
	cathode bias . .	0.5	..	megohm

DEC. 20, 1946

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

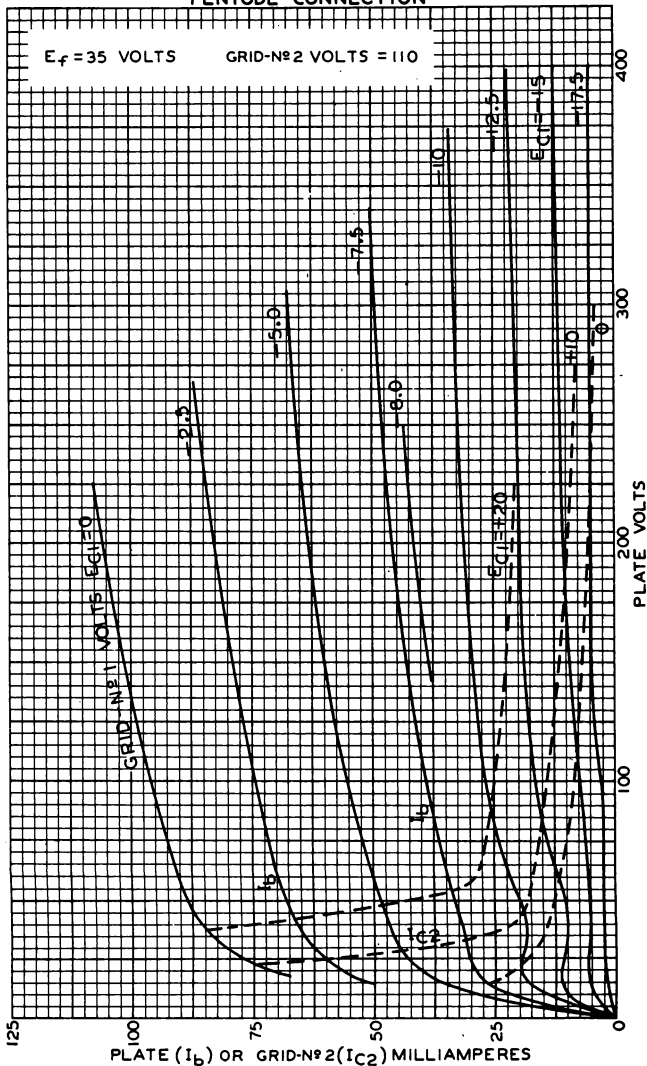
TENTATIVE DATA



35B5

35B5

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



AUG. 15, 1941

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

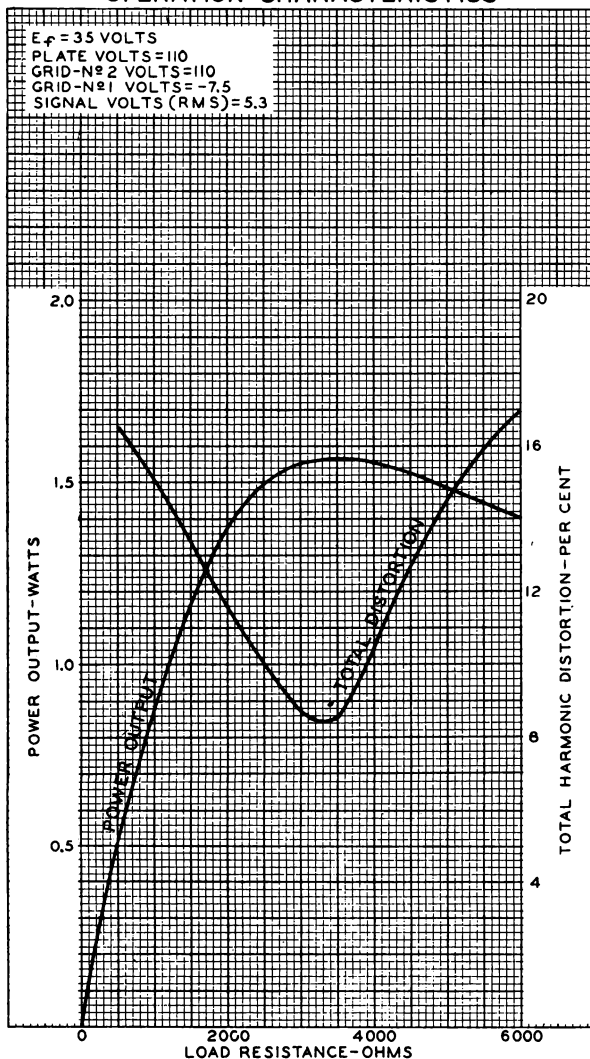
92CM-6312R1

35B5



35B5

OPERATION CHARACTERISTICS



SEPT. 20, 1946

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6794



35C5

35C5

BEAM POWER TUBE

MINIATURE TYPE

Except for a different basing arrangement, which simplifies the problem of meeting Underwriters' Laboratories requirements in the design of ac/dc receivers, the 35C5 is similar to the miniature type 35B5.

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 35 ac or dc volts

Current. 0.15 amp

Direct Interelectrode Capacitances (Approx.):^oGrid No.1 to plate 0.60 . . . μ f

Grid No.1 to cathode & grid No.3,

grid No.2, and heater. 12 . . . μ f

Plate to cathode & grid No.3,

grid No.2, and heater. 9 . . . μ f**Mechanical:**

Mounting Position. Any

Maximum Overall Length 2-5/8"

Maximum Seated Length. 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip). . . 2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

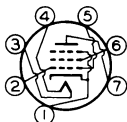
Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 7CV

Pin 1 - Cathode,
Grid No.3

Pin 2 - Grid No.1

Pin 3 - Heater



Pin 4 - Heater

Pin 5 - Grid No.1

Pin 6 - Grid No.2

Pin 7 - Plate

AMPLIFIER - Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 135 max. volts

GRID-No.2 (SCREEN) VOLTAGE 117 max. volts

PLATE DISSIPATION. 4.5 max. watts

GRID-No.2 INPUT. 1 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . . 180 max. volts

Heater positive with respect to cathode. . . 180 max. volts

BULB TEMPERATURE (At hottest point) ♦ 250 max. °C

^o Without external shield.

♦ High ambient temperature and shielding may necessitate a reduction in operating dissipation. When tube shields are used it is advisable to paint both inside and outside surfaces of tube shield a dull black and to provide ventilation slots to reduce operating temperature.

← Indicates a change.

JAN. 3, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

35C5



35C5

BEAM POWER TUBE

Typical Operation and Characteristics:

Plate Voltage.	110	volts
Grid-No.2 Voltage.	110	volts
Grid-No.1 (Control-Grid) Voltage.	-7.5	volts
Peak AF Grid-No.1 Voltage.	7.5	volts
Zero-Signal Plate Current.	40	ma
Max.-Signal Plate Current (Approx.).	41	ma
Zero-Signal Grid-No.2 Current.	3	ma
Max.-Signal Grid-No.2 Current.	7	ma
Plate Resistance (Approx.)	13000	ohms
Transconductance	5800	μ mhos
Load Resistance	2500	ohms
Total Harmonic Distortion.	10	%
Max.-Signal Power Output	1.5	watts

Maximum Circuit Values (For maximum rated conditions):**Grid-No.1-Circuit Resistance:**

For fixed-bias operation	0.1 max. megohm
For cathode-bias operation	0.5 max. megohm

Curves shown under type 35B5 also apply to the 35C5



35L6-GT

35L6-GT

BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 35 ac or dc volts

Current. 0.15 amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to Plate 0.8 μf

Input. 13 μf

Output 9.5 μf

^o With no external shield.

Mechanical:

Mounting Position. Any

Maximum Overall Length. 3-5/16"

Maximum Seated Length. 2-3/4"

Maximum Diameter. 1-5/16"

Bulb T-9

Base Intermediate-Shell Octal 7-Pin

Basing Designation for BOTTOM VIEW. G-7AC

Pin 1-No
Connection
Pin 2-Heater
Pin 3-Plate
Pin 4-Grid No.2



Pin 5-Grid No.1
Pin 7-Heater
Pin 8-Cathode,
Grid No.3

AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 200 max. volts

GRID-No.2 (SCREEN) VOLTAGE 117 max. volts

PLATE DISSIPATION. 8.5 max. watts

GRID-No.2 DISSIPATION. 1.0 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

Plate Voltage. 110 200 . . volts

Grid-No.2 Voltage 110 110 . . volts

Grid-No.1 (Control-Grid) Voltage -7.5 -8 . . volts

Peak AF Grid-No.1 Voltage. 7.5 8 . . volts

Zero-Signal Plate Current. 40 41 . . ma.

Max.-Signal Plate Current. 41 44 . . ma.

Zero-Signal Grid-No.2 Current. 3 2 . . ma.

Max.-Signal Grid-No.2 Current. 7 7 . . ma.

Plate Resistance (Approx.) 14000 40000 ohms

Transconductance 5800 5900 μmhos

Load Resistance. 2500 4500 ohms

Total Harmonic Distortion. 10 10 %

Max.-Sig. Power Output 1.5 3.3 watts

JUNE 20, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

35L6-GT



35L6-GT BEAM POWER AMPLIFIER

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias	0.1 . . megohm
For cathode bias	0.5 . . megohm

Curves shown under Type 35B5 are also applicable
to the 35L6-GT.

JUNE 20, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

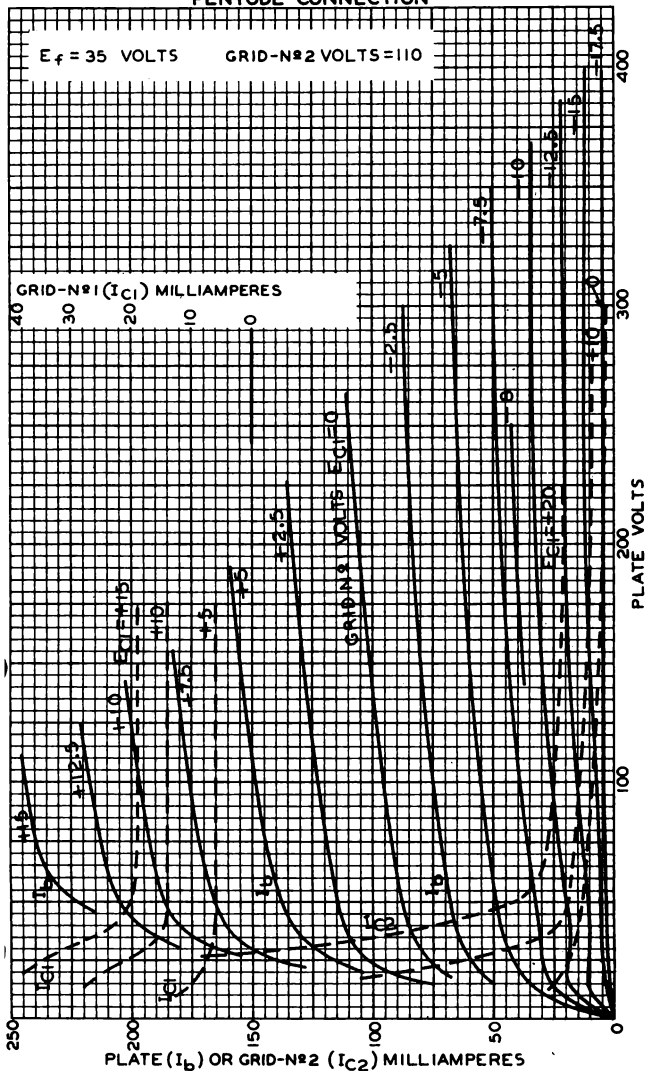
DATA



35L6-GT

35L6-GT

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



AUG. 11, 1941

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

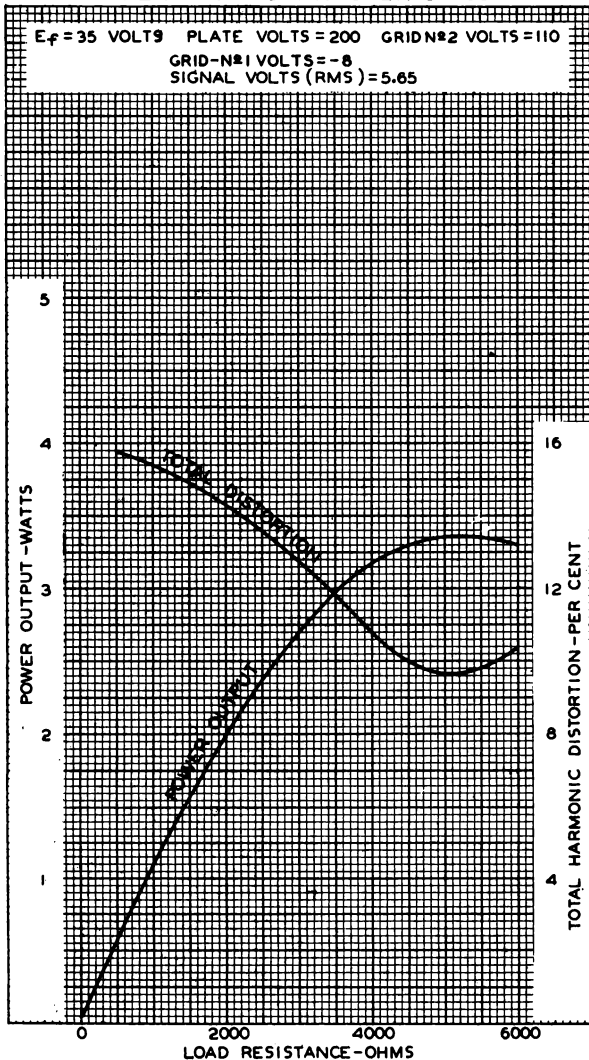
92CM-6309

35L6-GT



35L6-GT

OPERATION CHARACTERISTICS



AUG. 21, 1941

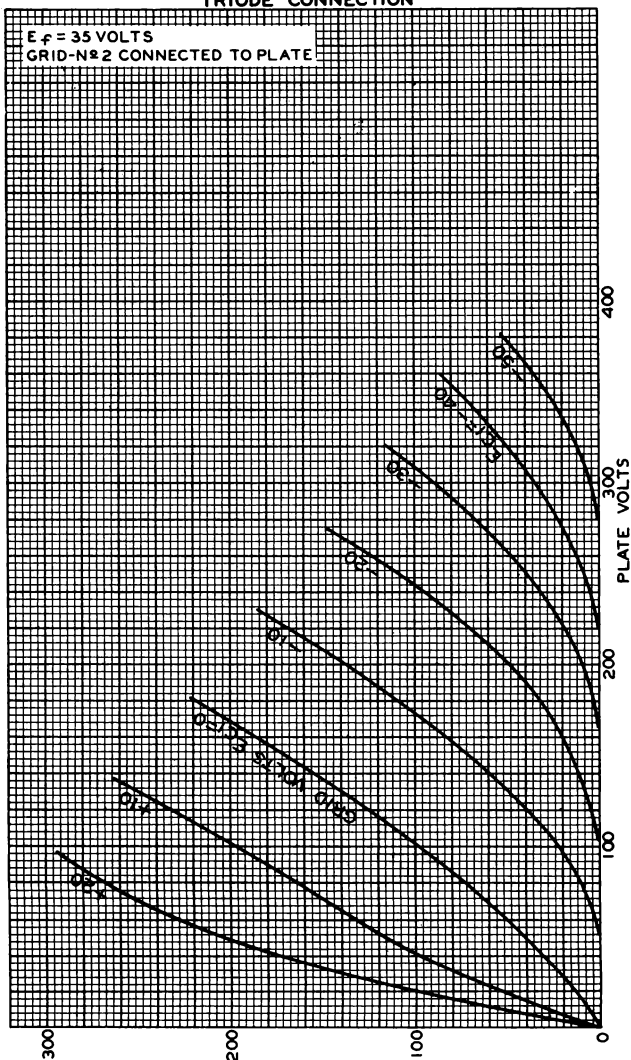
TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM - 6315



35L6-GT

35L6-GT AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



AUG. 6, 1941

PLATE MILLIAMPERES
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM - 6307R1



35W4

35W4

HALF-WAVE VACUUM RECTIFIER

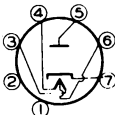
MINIATURE TYPE

GENERAL DATA

Electrical:		Without Panel Lamp	With No. 40 or No. 47 Panel Lamp	
Heater, for Unipotential Cathode:				
Voltage (AC or DC):				
Entire Heater (pins 3 & 4) . . .		35	32	volts
Panel-Lamp Section (pins 4 & 6) . . .		7.5	5.5	volts
Current {	between pins 3 & 4 . . .	0.15	—	amp
	between pins 3 & 6 . . .	—	0.15	amp

Mechanical:

Mounting Position.	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length.	2-3/8"
Length from Base Seat to Bulb Top (Excluding tip)	2" ± 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin 5BQ
Basing Designation for BOTTOM VIEW	
Pin 1—No Connection	Pin 6—Heater Tap
Pin 2—No Connection	Pin 7—Cathode
Pin 3—Heater	Panel-Lamp Heater
Pin 4—Heater	Section is be-
Pin 5—Plate	tween pins 4 & 6



HALF-WAVE RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	330 max.	volts
PEAK PLATE CURRENT	600 max.	ma
DC OUTPUT CURRENT:		
With Panel Lamp & { No Shunting Resistor.	60 max.	ma
{ Shunting Resistor	90 max.	ma
Without Panel Lamp	100 max.	ma
PANEL-LAMP-SECTION VOLTAGE (RMS):		
When panel lamp fails.	15 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	330 max.	volts
Heater positive with respect to cathode.	330 max.	volts

Typical Operation with No.40 or No.47 Panel Lamp in

Accompanying Half-Wave Circuit with Capacitor-Input Filter:

AC Plate-Supply Volt. (RMS).	117	117	117	117	volts
Filter-Input Capacitor	40	40	40	40	μf
Min. Total Effective					
Plate-Supply Impedance	15	15	15	15	ohms
Panel-Lamp Shunting Res.	—	300	150	100	ohms
DC Output Current.	60	70	80	90	ma

← Indicates a change.

SEPT. 1, 1950

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

35W4**35W4**

HALF-WAVE VACUUM RECTIFIER

Typical Operation Without Panel Lamp in Conventional
Half-Wave Circuit with Capacitor-Input Filter:

AC Plate-Supply Voltage (RMS)	117	volts
Filter-Input Capacitor	40	μ f
Min. Total Effective Plate-Supply Imped.	15	ohms
DC Output Current	100	ma
DC Output Voltage at Input to Filter (Approx.):		
→ At half-load current (50 ma.)	135	volts
At full-load current (100 ma.)	120	volts
Voltage Regulation (Approx.):		
→ Half-load to full-load current	15	volts

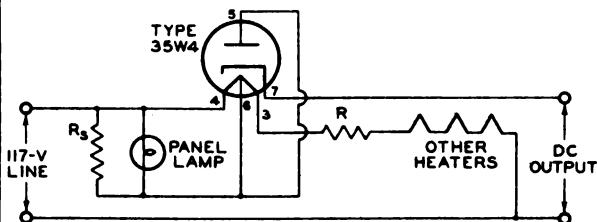
Maximum Circuit Values:

Panel-Lamp Shunting Resistor:*

For dc output current of	70 ma.	800 max. ohms
	80 ma.	400 max. ohms
	90 ma.	250 max. ohms

*Required when dc output current is greater than 60 ma.

HALF-WAVE CIRCUIT with No.40 or No.47 Panel Lamp



DROP ACROSS R AND ALL HEATERS (WITH
PANEL LAMP) SHOULD EQUAL 117 VOLTS AT
0.15 AMPERE. R_s = SHUNTING RESISTOR
REQUIRED WHEN DC OUTPUT CURRENT
EXCEEDS 60 MILLIAMPERES

92C5-6626

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its use and without prejudice to RCA's patent rights.

→ Indicates a change.

SEPT. 1, 1950

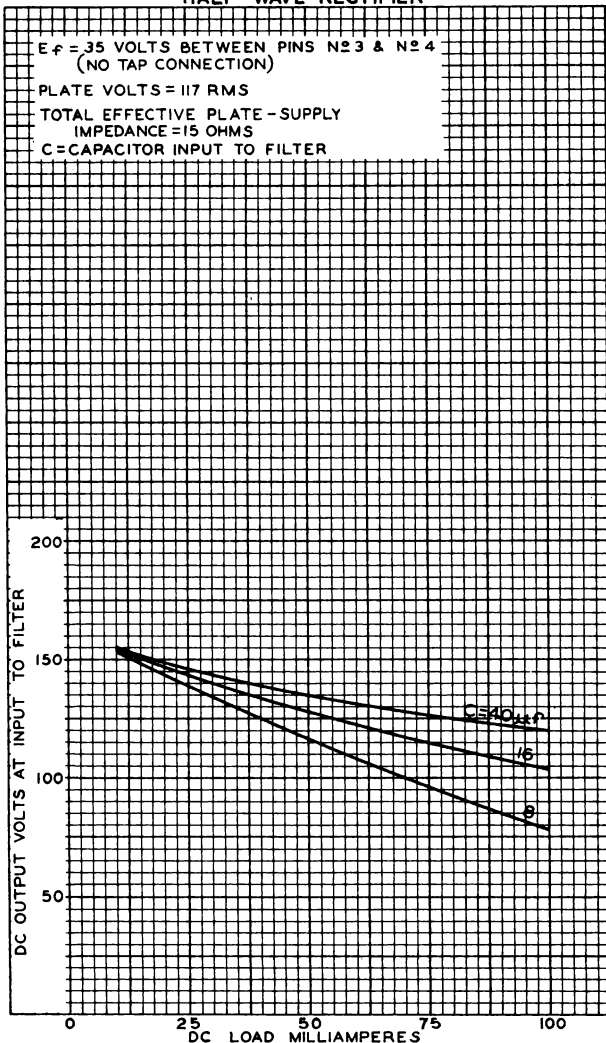
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



35W4

35W4 OPERATION CHARACTERISTICS HALF-WAVE RECTIFIER



MAY 19, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

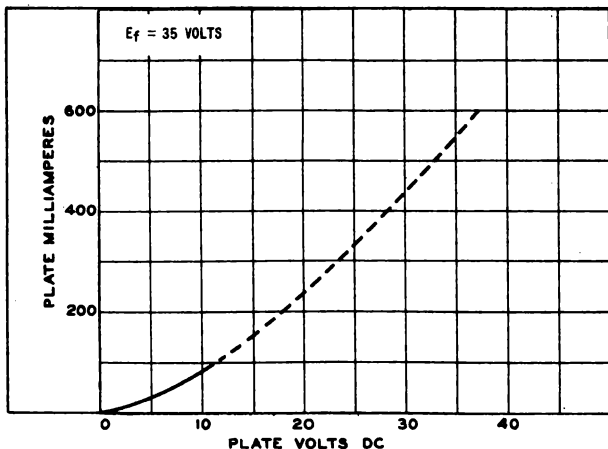
92CM-6615R1

35W4



35W4

AVERAGE PLATE CHARACTERISTIC



92CM-6305TV

SEPT. 1, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6305TV



35Y4

35Y4

HALF-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:

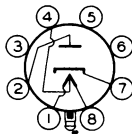
	Without Panel Lamp	With No.40 or No.47 Panel Lamp	
Heater, for Unipotential Cathode:			
Voltage (AC or DC):			
Entire Heater (pins 1 & 8) . .	35	32	volts
Panel-Lamp Section (pins 1 & 4) .	7.5	5.5	volts
Current { between pins 1 & 8 . .	0.15	-	amp
between pins 4 & 8 . .	-	0.15	amp

▲ Under typical operating conditions shown below.

Mechanical:

Mounting Position.	Any
Maximum Overall Length	3-5/32"
Maximum Seated Length.	2-5/8"
Maximum Diameter	1-3/16"
Bulb	T-9
Base	Lock-in 8-Pin
Basing Designation for BOTTOM VIEW	5AL

Pin 1-Heater
Pin 2-Plate
Pin 3-No Connection
Pin 4-Heater Tap
Pin 5-No Connection
Pin 6-No Connection



Pin 7-Cathode
Pin 8-Heater
Plug - Base Shell
Panel-Lamp Heater
Section is be-
tween pins 1 & 4

HALF-WAVE RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	700 max.	volts
PEAK PLATE CURRENT	600 max.	ma
DC OUTPUT CURRENT:		
With Panel Lamp & { No Shunting Resistor. .	60 max.	ma
Shunting Resistor . .	90 max.	ma
Without Panel Lamp	100 max.	ma
PANEL-LAMP-SECTION VOLTAGE (RMS):		
When panel lamp fails.	15 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	300 max.	volts
Heater positive with respect to cathode .	300 max.	volts

Typical Operation With No.40 or No.47 Panel Lamp
in Circuit Below with Capacitor-Input Filter:

AC Plate-Supply Volt. (RMS)	117	117	117	117	235	volts
Filter-Input Capacitor . .	40	40	40	40	40	μf
Min. Total Effective						
Plate-Supply Impedance .	15	15	15	15	100	ohms
Panel-Lamp Shunting Res. .	-	300	150	100	-	ohms
DC Output Current.	60	70	80	90	60	ma

DEC. 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

35Y4



35Y4

HALF-WAVE VACUUM RECTIFIER

Typical Operation Without Panel Lamp in Conventional Half-Wave Circuit with Capacitor-Input Filter:

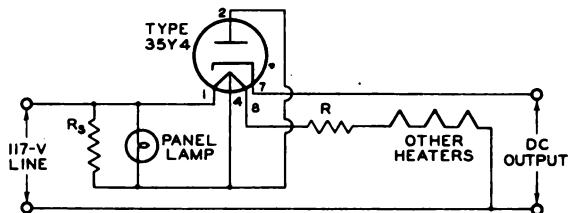
AC Plate-Supply Voltage (RMS)	117	235	volts
Filter-Input Capacitor	40	40	μ f
Min. Total Effective Plate-Supply Imped.	15	100	ohms
DC Output Current	100	100	ma
DC Output Voltage at Input to Filter (Approx.):			
At half-load current (50 ma.)	140	280	volts
At full-load current (100 ma.)	120	235	volts
Voltage Regulation (Approx.):			
Half-load to full-load current	20	45	volts

Maximum Circuit Values:

Panel-Lamp Shunting Resistor:*

For dc output current of	70 ma. . . .	800 max.	ohms
	80 ma. . . .	400 max.	ohms
	90 ma. . . .	250 max.	ohms

* Required when dc output current is greater than 60 ma.



DROP ACROSS R AND ALL HEATERS (WITH PANEL LAMP) SHOULD EQUAL 117 VOLTS AT 0.15 AMPERE. R_s = SHUNTING RESISTOR REQUIRED WHEN DC OUTPUT CURRENT EXCEEDS 60 MILLIAMPERES

92CS-6626

Many of the devices and arrangements shown or described herein use inventions of patents owned by RCA or others. Information contained herein is furnished without assuming any responsibility for its use.

DEC. 30, 1947

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



35Z3

35Z3 HALF-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 35 ac or dc volts

Current. 0.15 amp

Mechanical:

Mounting Position. Any

Maximum Overall Length. 3-5/32"

Maximum Seated Length. 2-5/8"

Maximum Diameter. 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 4Z

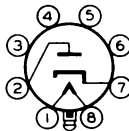
Pin 1 - Heater

Pin 2 - Plate

Pin 3 - No
Connection

Pin 4 - No
Connection

Pin 5 - No
Connection



Pin 6 - No

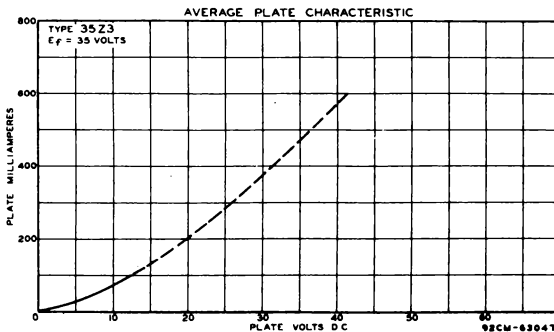
Connection

Pin 7 - Cathode

Pin 8 - Heater

Plug - Base
Shell

Maximum Ratings and Typical Operating Conditions for the 35Z3 are the same as for Type 35Z4-GT.



JUNE 20, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

35Z4-GT



35Z4-GT HALF-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 35 ac or dc volts

Current. 0.15 amp

Mechanical:

Mounting Position. Any

Maximum Overall Length. 3-5/16"

Maximum Seated Length. 2-3/4"

Maximum Diameter. 1-5/16"

Bulb T-9

Base Intermediate-Shell Octal 6-Pin

Basing Designation for BOTTOM VIEW. G-5AA

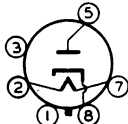
Pin 1 - No

Connection

Pin 2 - Heater

Pin 3 - No

Connection



Pin 5 - Plate

Pin 7 - Heater

Pin 8 - Cathode

HALF-WAVE RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE. 700 max. volts

PEAK PLATE CURRENT. 600 max. ma.

DC OUTPUT CURRENT. 100 max. ma.

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 350 max. volts

Heater positive with respect to cathode. 350 max. volts

Typical Operation with Capacitor-Input Filter:

AC Plate-Supply Voltage (RMS). 117 235 volts

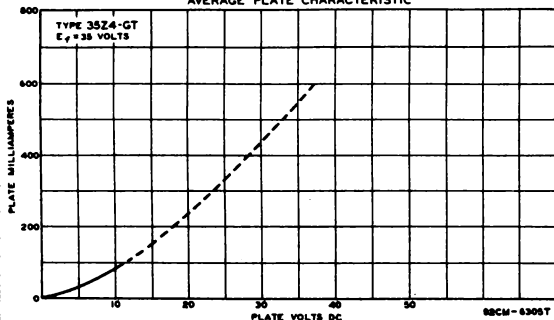
Min. Total Effective Plate-Supply Imped. [▲] 15 100 ohms

DC Output Current. 100 100 ma.

[▲] When a filter-input capacitor larger than 40 μ f is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.

Curves under Type 35Z5-GT also apply to the 35Z4-GT

AVERAGE PLATE CHARACTERISTIC



JUNE 20, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



35Z5-GT/G

35Z5-GT/G

HALF-WAVE HIGH-VACUUM RECTIFIER

Heater	Coated Unipotential Cathode	
Voltage	Entire Heater (pins 2 & 7) Panel Lamp Section (pins 2 & 3) with 0.15 amp. between pins 2 & 7	35 a-c or d-c volts 7.5 a-c or d-c volts 0.15 amp.
Current		
Maximum Overall Length		3-5/16"
Maximum Seated Height		2-3/4"
Maximum Diameter		1-5/16"
Bulb		T-9
Base	Intermediate Shell Octal 6-Pin	
Pin 1—No Connection		Pin 5—Plate
Pin 2—Heater		Pin 7—Heater
Pin 3—Heater Tap		Pin 8—Cathode
Mounting Position		Any



BOTTOM VIEW (G-6AD)

Maximum Ratings Are Design-Center Values

HALF-WAVE RECTIFIER

Peak Inverse Plate Voltage	700 max. volts
Peak Plate Current	600 max. ma.
D-C Output Current:	
With Panel Lamp and	{ No Shunting Resistor 60 max. ma. Shunting Resistor * 90 max. ma.
Without Panel Lamp	100 max. ma.
D-C Heater-Cathode Potential	350 max. volts
Panel-Lamp-Sect. Volt. (RMS) when panel lamp fails	15 max. volts

Typical Operation with #40 or #47 Panel Lamp in Circuit
on Next Page with Condenser-Input Filter:

Heater Cur. between Pins 3 & 7	0.15	0.15	0.15	0.15	0.15	amp.
Heater Volt. between Pins 2 & 7	32	32	32	32	32	volts
Section Volt. between Pins 2 & 3	5.5	5.5	5.5	5.5	5.5	volts
A-C Plate-Supply Voltage (RMS)	117	117	117	117	235	volts
Filter Input Condenser	40	40	40	40	40	μf
Min. Total Effec. Plate-Supply Imped.	15	15	15	15	100	ohms
D-C Output Current	60	70	80	90	60	ma.
Shunting Resistance	-	300	150	100	-	ohms

Typical Operation Without Panel Lamp in Conventional
Half-Wave Circuit with Condenser-Input Filter:

Heater Cur. between Pins 3 & 7	0.15	0.15	amp.
Heater Volt. between Pins 2 & 7	35	35	volts
Section Volt. between Pins 2 & 3	7.5	7.5	volts
A-C Plate-Supply Voltage (RMS)	117	235	volts
Filter Input Condenser	40	40	μf
Min. Total Effec. Plate-Supply Imped.	15	100	ohms
D-C Output Current	100	100	ma.
D-C Voltage (At input to filter):**			
At half-load current (50 ma.)	140	280	volts
At full-load current (100 ma.)	120	235	volts
Difference (Voltage Regulation)	20	45	volts
Percentage Regulation	14	16	%

* A pilot lamp shunting resistor is required for a d-c output current greater than 60 ma. See Typical Operation for representative values. Maximum values are as follows: for 70 ma., 800 ohms; for 80 ma., 400 ohms; for 90 ma., 250 ohms.

** Values are approximate.

The Curve under Type 35Z4-GT also applies to the 35Z5-GT/G.

June 1, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

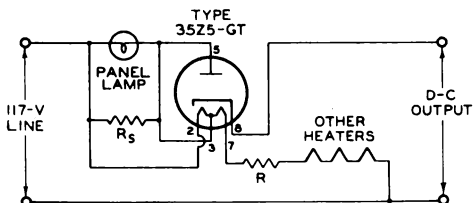
DATA

35Z5-GT



35Z5-GT

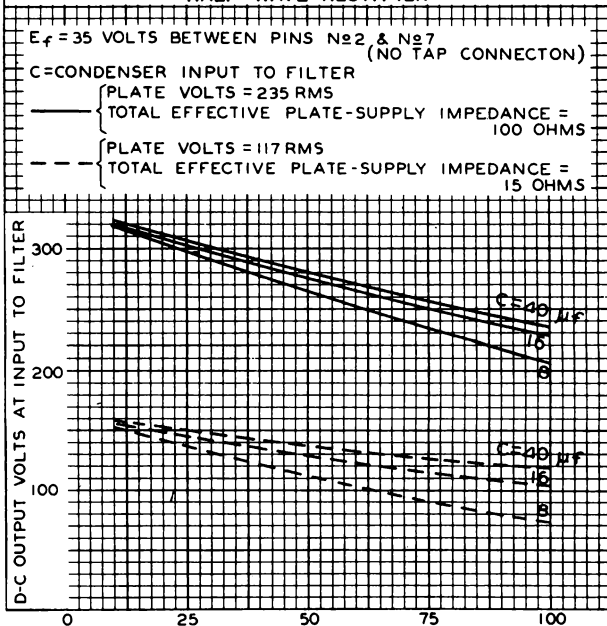
HALF-WAVE HIGH-VACUUM RECTIFIER



DROP ACROSS R AND ALL HEATERS (WITH PANEL LAMP) SHOULD EQUAL 117 VOLTS AT 0.15 AMPERE. R_s = SHUNTING RESISTOR REQUIRED WHEN D-C OUTPUT CURRENT EXCEEDS 60 MILLIAMPERES

The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.

OPERATION CHARACTERISTICS HALF-WAVE RECTIFIER



June 1, 1943

 D-C LOAD MILLIAMPERES
 RCA VICTOR DIVISION

CE-6361

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

RCA-36

SCREEN GRID R-F AMPLIFIER

Heater	Coated Uni-potential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:		
Grid to Plate (with shield-can)		0.007 max. μ f
Input		3.7 μ f
Output		9.2 μ f
Overall Length	(3)	4-9/32" to 4-17/32"
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap	(2) (4)	Small Metal
Base		Small 5-Pin
Pin 1-Heater	(1) (5)	Pin 4-Cathode
Pin 2-Plate		Pin 5-Heater
Pin 3-Screen		Cap -Grid

BOTTOM VIEW
AMPLIFIER (Class A)

Operating Conditions and Characteristics:				
Heater *	6.3	6.3	6.3	volts
Plate	100	135	180	250 max. volts
Screen	55	67.5	90 max.	90 max. volts
Grid	-1.5	-1.5	-3	-3 volts
Amp. Fact.	470	475	525	595
Plate Res.	0.55	0.475	0.50	0.55 megohm
Mut. Cond.	850	1000	1050	1080 μ hos
Plate Cur.	1.8	2.8	3.1	3.2 ma.
Screen Cur.	-	-	-	1.7 max. ma.

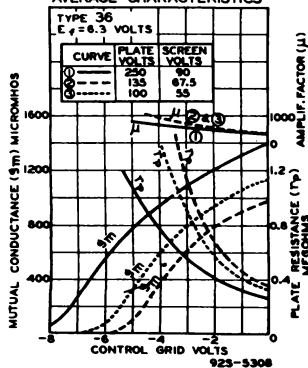
DETECTOR

Typical Operation:	Biased			Grid-Leak
Heater *	6.3	6.3	6.3	6.3 volts
Plate-Supply	100	180	250 max.	135 volts
Screen	55	67.5	90 max.	Up to 45 volts
Grid	-5%	-6%	-8%	Return to Cathode volts
Plate Load	0.250	0.250	0.250	0.250 megohm
Plate Cur.	Adjusted to 0.1 ma. with no input signal			-
Grid Leak	-	-	-	2 to 5 megohms
Grid Condenser	-	-	-	0.00025 μ f

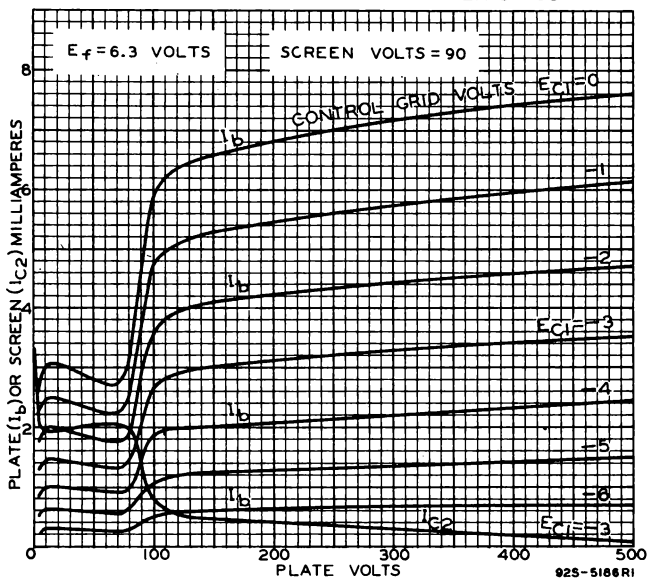
Or equivalent impedance. In designing circuits to use the 36 as a detector, it is desirable to work from the detector stage directly into the power output stage. * Approximate.

* In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

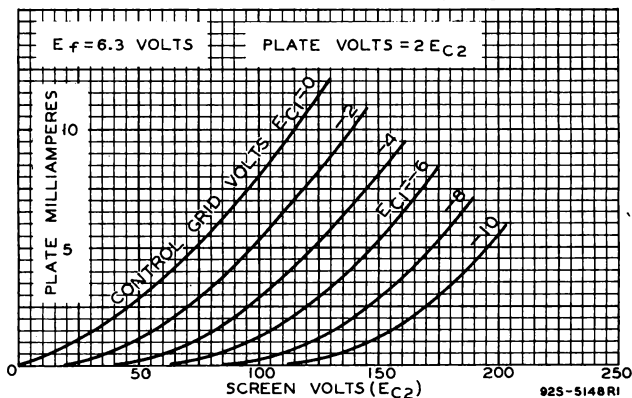
AVERAGE CHARACTERISTICS



AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS





41

POWER PENTODE

Heater [■]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.4	amp.
Direct Interelectrode Capacitances (Approx.): ^o		
Grid to Plate	0.6	μf
Input	6.0	μf
Output	7.5	μf
Maximum Overall Length		4-3/16"
Maximum Seated Height		3-9/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Base	Small-Shell Small 6-Pin	
Pin 1 - Heater		Pin 4 - Grid
Pin 2 - Plate		Pin 5 - Cathode
Pin 3 - Screen		Pin 6 - Heater
Mounting Position		Any



BOTTOM VIEW (6B)

Maximum Ratings Are Design-Center Values

SINGLE-TUBE AMPLIFIER

Plate Voltage	315 max.	volts
Screen Voltage	285 max.	volts
Plate Dissipation	8.5 max.	watts
Screen Dissipation	2.8 max.	watts

Typical Operation and Characteristics - Class A₁ Amplifier:

Plate	100	250	315	volts
Screen	100	250	250	volts
Grid [■]	-7	-18	-21	volts
Peak A-F Grid Voltage	7	18	21	volts
Zero-Sig. Plate Cur.	9	32	25.5	ma.
Max.-Sig. Plate Cur.	9.5	33	28	ma.
Zero-Sig. Screen Cur.	1.6	5.5	4.0	ma.
Max.-Sig. Screen Cur.	3	10	9	ma.
Plate Resistance	104000	68000	75000	approx. ohms
Transconductance	1500	2300	2100	μmhos
Load Resistance	12000	7600	9000	ohms
Total Harmonic Dist.	11	11	15	%
Max.-Sig. Power Output	0.35	3.4	4.5	watts

PUSH-PULL AMPLIFIER

Plate Voltage	315 max.	volts
Screen Voltage	285 max.	volts
Plate Dissipation	8.5 max.	watts
Screen Dissipation	2.8 max.	watts

Typical Operation - Class A₁ Amplifier:

Unless otherwise specified, values are for 2 tubes

	Fixed Bias	Cathode Bias	
Plate Voltage	285	285	volts
Screen Voltage	285	285	volts

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

^o With no external shield.

* See next page.

← Indicates a change.

OCTOBER 1, 1951

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

41



41

POWER PENTODE

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Grid*	-25.5	-	volts
Cathode Resistor	-	400	ohms
Peak A-F Grid to Grid Volt.	51	51	volts
Zero-Sig. Plate Cur.	55	55	ma.
Max.-Sig. Plate Cur.	72	61	ma.
Zero-Sig. Screen Cur.	9	9	ma.
Max.-Sig. Screen Cur.	17	13	ma.
Effective Load Resistance (plate to plate)	12000	12000	ohms
Total Harmonic Dist.	6	4	%
Max.-Sig. Power Output	10.5	9.8	watts

* The type of input coupling should not introduce too much resistance in the grid circuit. Transformer- or impedance-coupling devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not to exceed 0.5 megohm.

Curves for Type 41 are the same as those shown for Type 6X6-GT.

OCTOBER 1, 1951

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



42

42

POWER AMPLIFIER PENTODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.7	amp.
Maximum Overall Length		4-11/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium 6-Pin
Pin 1-Heater		Pin 4-Grid
Pin 2-Plate		Pin 5-Cathode
Pin 3-Screen		Pin 6-Heater



BOTTOM VIEW

For additional data, refer to Type 6F6; and to Types 6F6 and 2A5 for additional curves. ←

← Indicates a change.

APRIL 20, 1938

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



OPERATION CHARACTERISTICS TRIODE CONNECTION-CLASS AB OPERATION

$E_f = 6.3$ VOLTS

INPUT STAGE : CLASS A DRIVER-ONE TYPE 42 AS TRIODE
PLATE VOLTS = 250

SELF-BIAS RESISTOR = 650 OHMS

OUTPUT STAGE : CLASS AB-TWO TYPE 42'S AS TRIODES

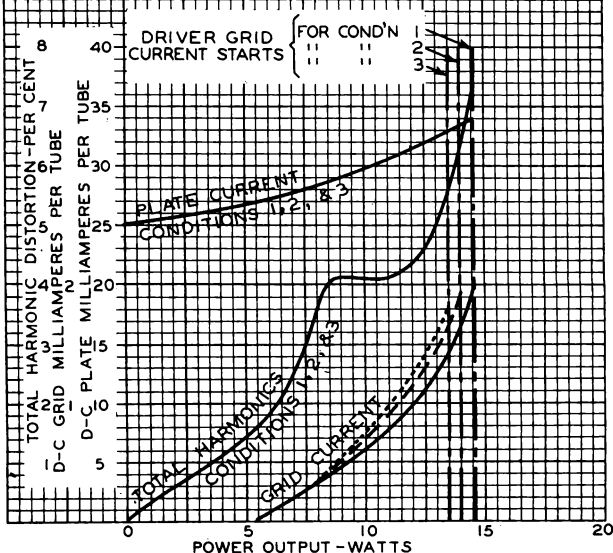
ZERO-SIGNAL PLATE VOLTS = 350, FROM
SUPPLY HAVING RESISTANCE (R_b)
SHOWN IN TABLE

ZERO-SIGNAL BIAS VOLTS = VALUE FROM
GRID-BIAS RESISTOR (R_c) OF
730 OHMS

OUTPUT LOAD, PLATE TO PLATE = 10000 OHMS

CONDI- TION	CURVE	R_b Ohms	DRIVER STAGE		INTERSTAGE TRANSFORMER	
			Input-Signal Volts* (RMS)	Plate Load Ohms	Voltage Ratio Prim.:1/2 Sec.	Peak Power Efficiency - %
1	—	0	14	15600	1.29	76.7
2	—	500	14	17400	1.29	76.0
3	-----	1000	14	17000	1.29	76.7

* For maximum output



RCA-43

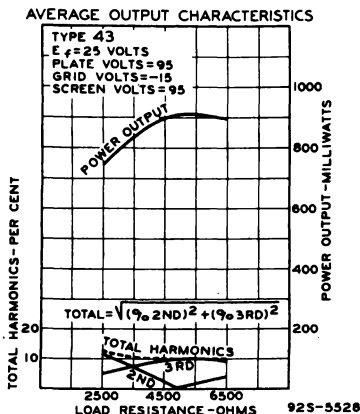
POWER AMPLIFIER PENTODE

Heater	Coated Unipotential Cathode	
Voltage	25.0	a-c or d-c volts
Current	0.3	amp.
Maximum Overall Length		4-11/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium 6-Pin
Pin 1-Heater		Pin 4-Grid
Pin 2-Plate		Pin 5-Cathode
Pin 3-Screen		Pin 6-Heater



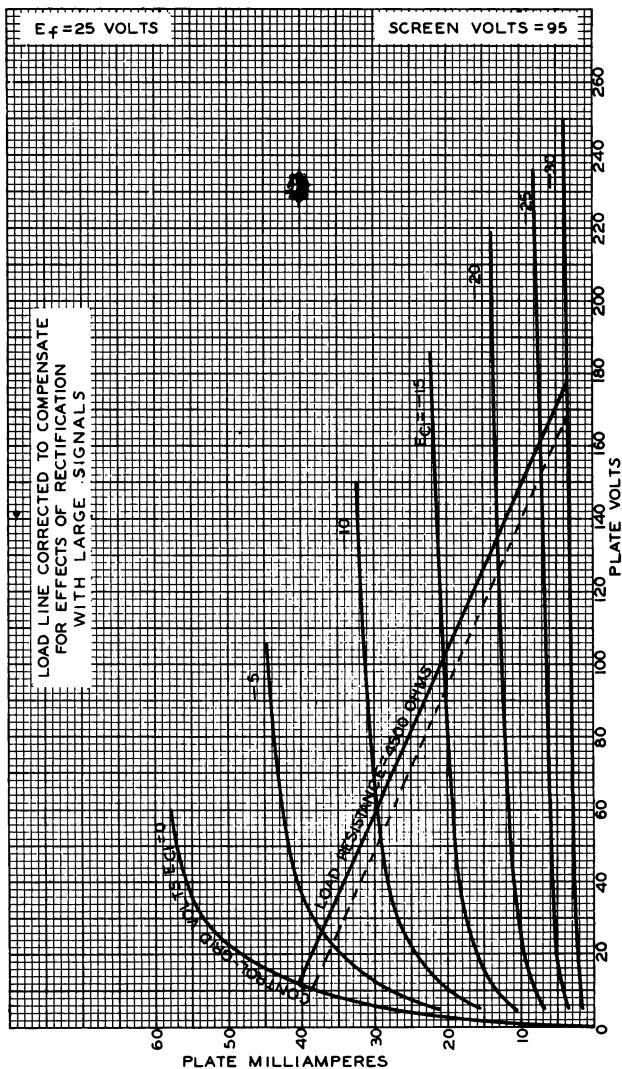
BOTTOM VIEW

For data and additional curve, refer to Type 25A6. The 43 and 25A6 are identical electrically.



RCA-43

AVERAGE PLATE CHARACTERISTICS



JULY 27, 1936

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

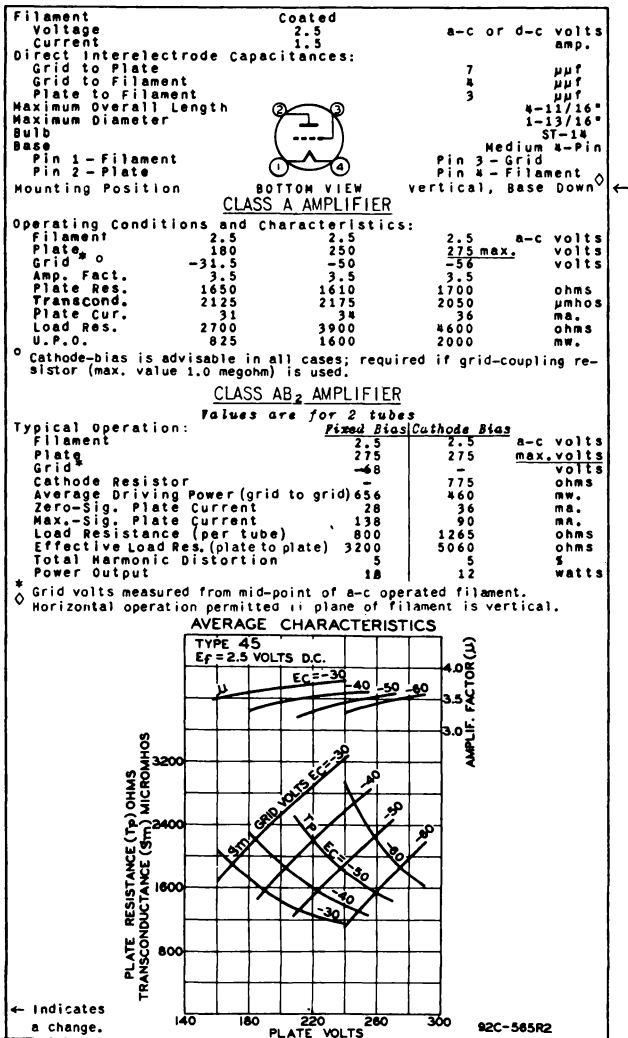
925-5231R1



45

45

POWER AMPLIFIER



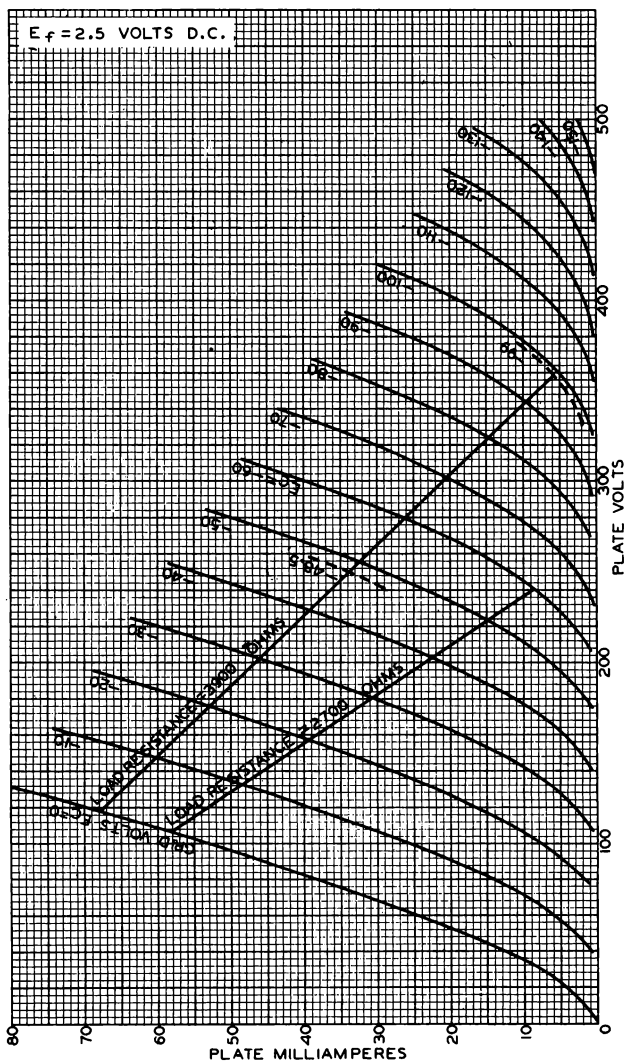
APRIL 20, 1938

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



AVERAGE PLATE CHARACTERISTICS



NOV. 17, 1932

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

925-508R2



45Z3



45Z3

HALF-WAVE HIGH-VACUUM RECTIFIER

MINIATURE TYPE

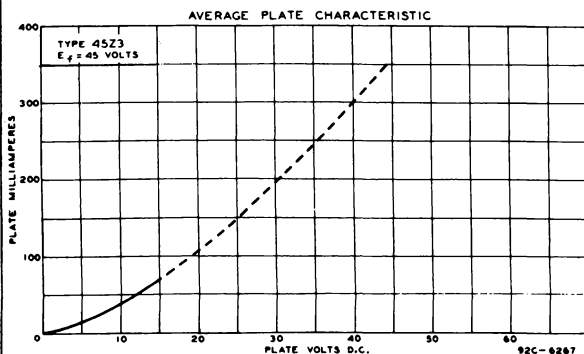
Heater	Coated Unipotential Cathode	
Voltage	45	a-c or d-c volts
Current	0.075	amp.
Maximum Overall Length		2-1/8"
Maximum Seated Height		1-7/8"
Maximum Diameter		3/4"
Bulb		T-5-1/2
Base ▲		Miniature Button 7-Pin
Pin 1 - Heater		Pin 4 - Cathode
Pin 2 - Plate		Pin 5 - No Connection
Pin 3 - (Internal Con. Do Not Use)		Pin 6 - Plate
		Pin 7 - Heater

Mounting Position BOTTOM VIEW (5AM) Any

Half-Wave Rectifier

Peak Inverse Voltage	350 max. volts
Peak Plate Current	390 max. ma.
D-C Heater-Cathode Potential	175 max. volts
With Condenser-Input Filter:	
A-C Plate Voltage (RMS)	117 max. volts
Total Effec. Plate-Supply Impedance	15 min. ohms
D-C Output Current	65 max. ma.

▲ The center hole in sockets designed for this base provides for the possibility that this tube type may be manufactured with the exhaust-tube tip at the base end. For this reason, it is recommended that in equipment employing this tube type, no material be permitted to obstruct the socket hole.



May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

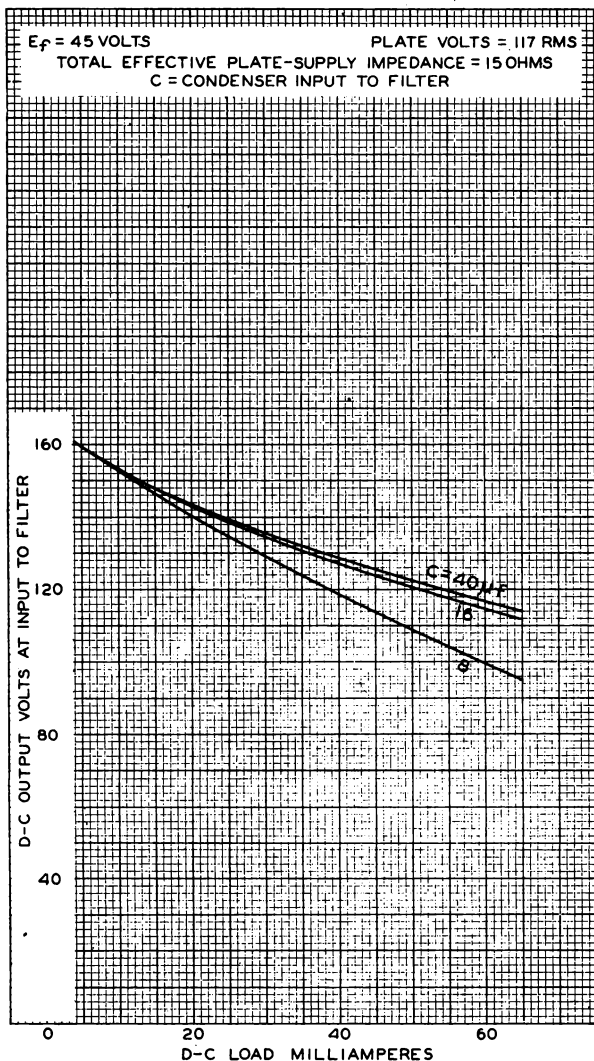
TENTATIVE DATA

45Z3



45Z3

OPERATION CHARACTERISTICS



APR. 23, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6266R1

POWER AMPLIFIER PENTODE

Filament	Coated	
Voltage	2.5	a-c or d-c volts
Current	1.75	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	1.2	μf
Input	8.6	μf
Output	13.0	μf
Maximum Overall Length	(3)	5-3/8"
Maximum Diameter		2-1/16"
Bulb		ST-16
Base	(2) (4)	Medium 5-Pin
Pin 1-Filament	(1) (5)	Pin 4-Screen
Pin 2-Plate		Pin 5-Filament
Pin 3-Grid		

BOTTOM VIEW

AMPLIFIER—Class A

Operating Conditions and Characteristics:

Filament	2.5	a-c volts
Plate	250 maximum	volts
Screen	250 maximum	volts
Grid #	-16.5	volts
Amp. Fact.	150	
Plate Res.	60000	ohms
Transcond.	2500	μmhos
Plate Cur.	31	ma.
Screen Cur.	6	ma.
Load Res.	7000	ohms
Power Output	2.7 ^o	watts

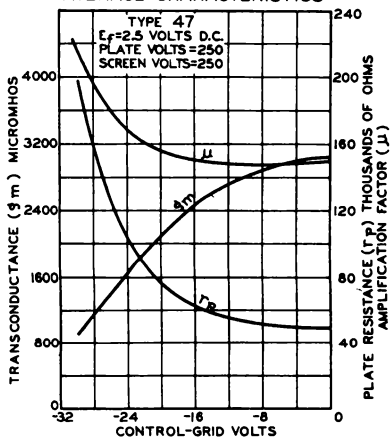
^o 6% total harmonic distortion.

* Grid volts measured from mid-point of a-c operated filament.

If a single 47 is self-biased, the self-biasing resistor (450 ohms) should be shunted by a suitable filter network to avoid degenerative effects at low audio frequencies. With two 47's in push-pull, the filter network may be omitted across the resistor (225 ohms).

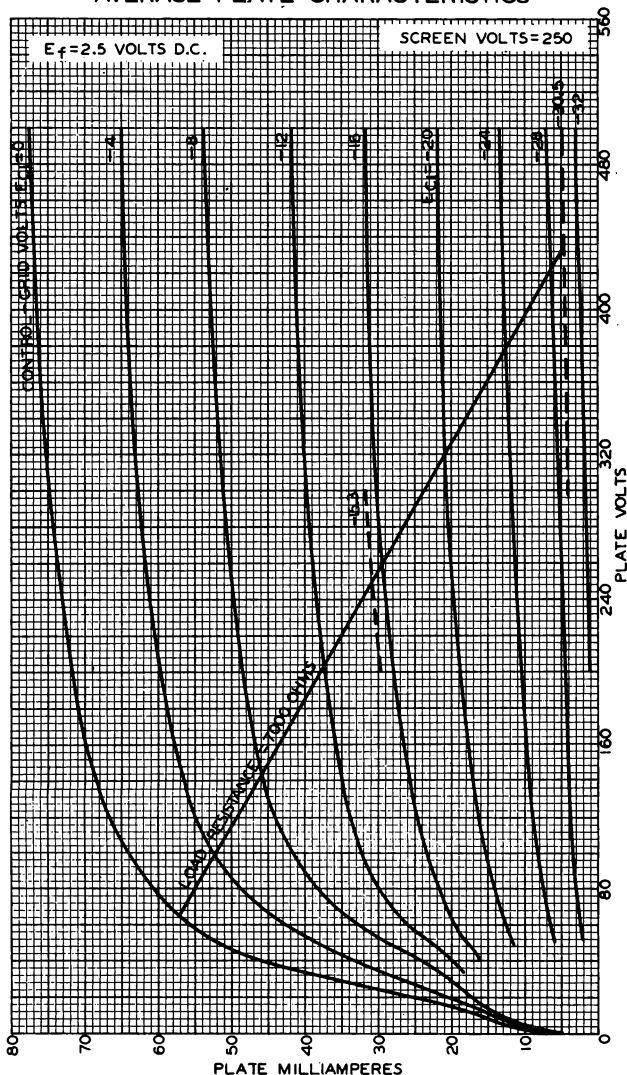
Transformer or impedance input-coupling devices are recommended. If, however, resistance coupling is employed, a grid resistor limited to 0.5 megohm may be used under self-bias conditions. Without self-bias, the grid resistor should not exceed 50000 ohms.

AVERAGE CHARACTERISTICS



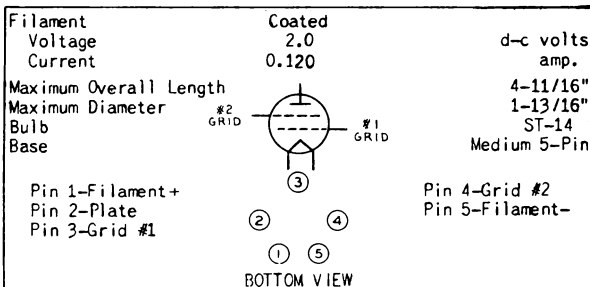
92C-5136

AVERAGE PLATE CHARACTERISTICS



RCA-49

DUAL-GRID POWER AMPLIFIER



CLASS B POWER AMPLIFIER

Grids #1 & #2 connected together at socket

Plate Voltage		180 max.	volts
Peak Plate Current		50 max.	ma.
Typical Operation (2 tubes):			
Filament	2.0	2.0	volts
Plate	135	180	volts
Grid (#1 & #2 tied together)	0	0	volts
Zero-Sig. Plate Cur. (per tube)	1.3	2	ma.
Load Resistance (per tube)	2000	3000	ohms
Effective Load Resistance (plate to plate)	8000	12000	ohms
Power Output (2 tubes)	2.3	3.5	<u>approx.watts</u>

CLASS A AMPLIFIER

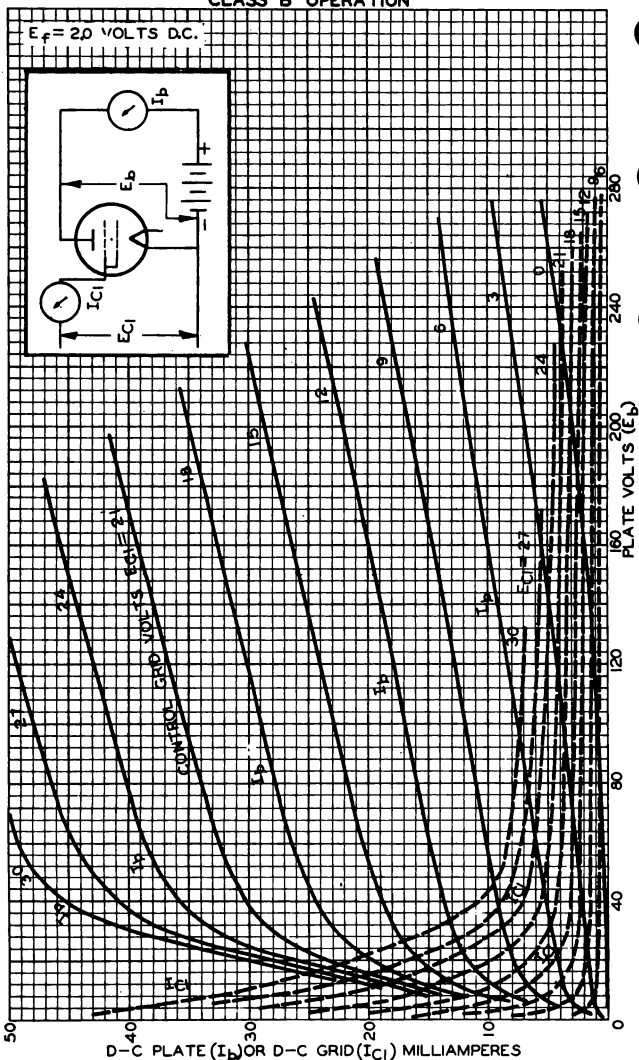
Grid #2 connected to plate at socket

Operating Conditions and Characteristics:

Filament	2.0	volts
Plate	135 max.	volts
Grid (#1 only)	-20	volts
Amp. Fact.	4.7	
Plate Res.	4175	ohms
Mut. Cond.	1125	μmhos
Plate Cur.	6.0	ma.
Load Res.	11000 *	ohms
Power Output	0.170	<u>approx.watts</u>

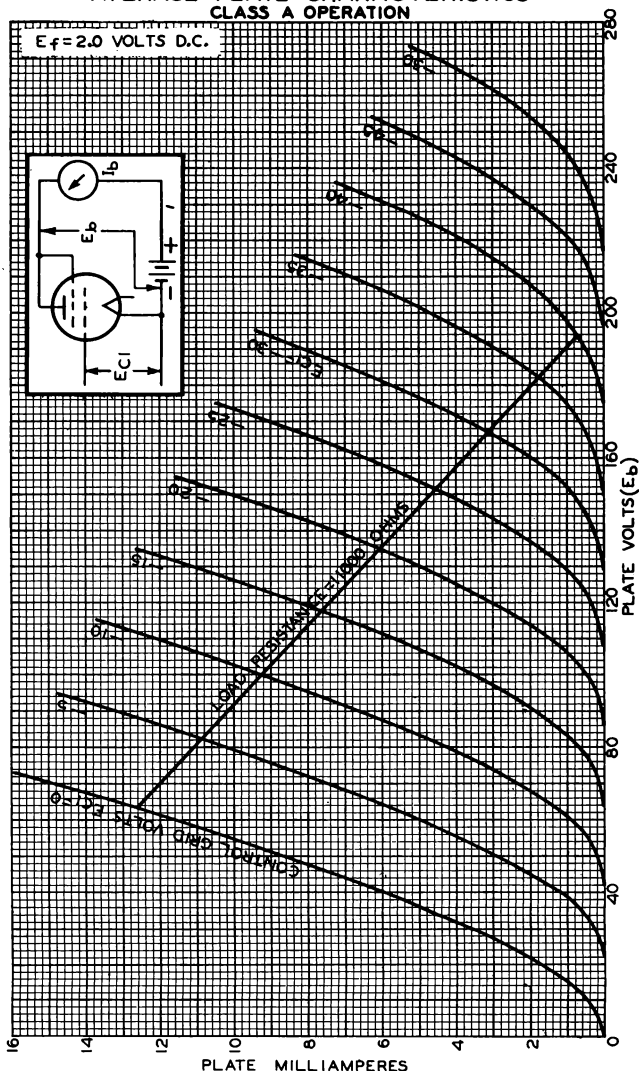
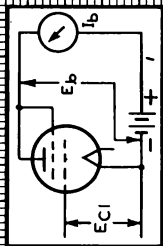
* Approximately twice this value is recommended for load of this tube when used as driver for Class B stage.

AVERAGE PLATE CHARACTERISTICS CLASS B OPERATION



AVERAGE PLATE CHARACTERISTICS
CLASS A OPERATION

$E_f = 2.0$ VOLTS D.C.



RCA-50 POWER AMPLIFIER

Filament	Coated	
Voltage	7.5	a-c or d-c volts
Current	1.25	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	7.1	μ uf
Grid to Filament	4.2	μ uf
Plate to Filament	3.4	μ uf
Maximum Overall Length		6-1/4"
Maximum Diameter	(2) (3)	2-7/16"
Bulb		ST-19
Base		Med. 4-Pin Bay.
Pin 1-Filament	(1) (4)	Pin 3-Grid
Pin 2-Plate		Pin 4-Filament

BOTTOM VIEW

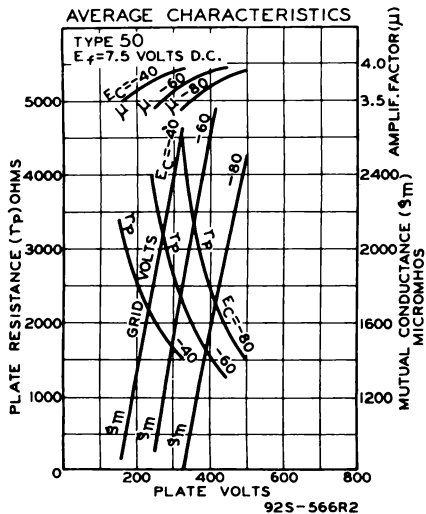
AMPLIFIER (Class A)

Operating Conditions and Characteristics:

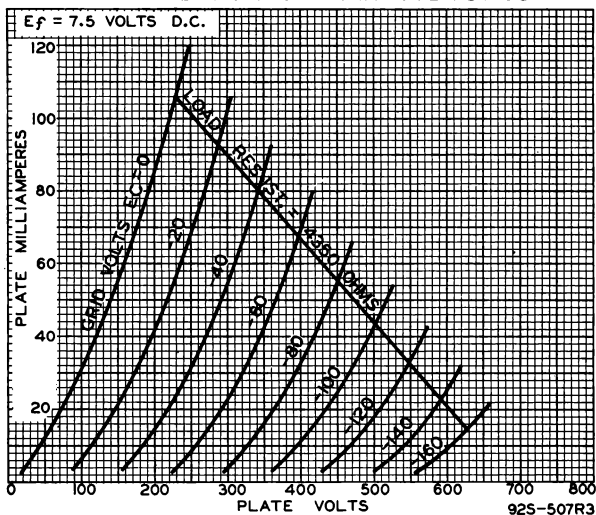
Filament	7.5	7.5	7.5	7.5	a-c volts
Plate	300	350	400	450 max.	volts
Grid *	-54	-63	-70	-84	volts
Amp. Fact.	3.8	3.8	3.8	3.8	
Plate Res.	2000	1900	1800	1800	ohms
Mut. Cond.	1900	2000	2100	2100	μ mhos
Plate Cur.	35	45	55	55	ma.
Load Res.	4600	4100	3670	4350	ohms
U.P.O.	1.6	2.4	3.4	4.6	watts

Self-bias is advisable in all cases. The resistance in the grid-coupling circuit should not exceed 10000 ohms.

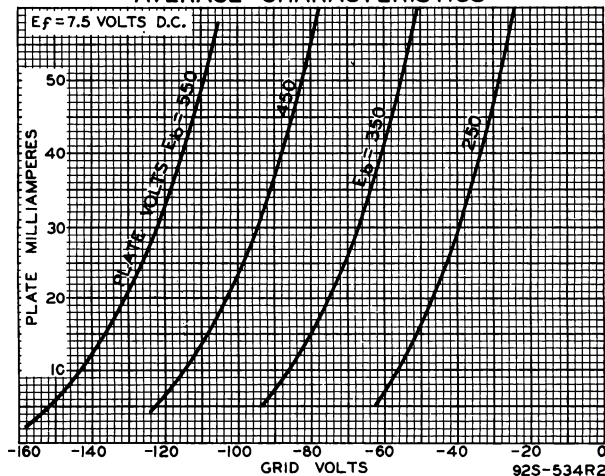
* Grid volts measured from mid-point of a-c operated filament.



AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS





50A5

50A5

BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 50 ac or dc volts

Current. 0.15 amp

Mechanical:

Mounting Position. Any

Maximum Overall Length. 3-5/32"

Maximum Seated Length. 2-5/8"

Maximum Diameter. 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW. 6AA

Pin 1 - Heater

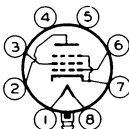
Pin 2 - Plate

Pin 3 - Grid No.2

Pin 4 - No

Connection

Pin 5 - No Connection



Pin 6 - Grid No.1

Pin 7 - Cathode,
Grid No.3

Pin 8 - Heater

Plug - Base
Shell

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 200 max. volts

GRID-No.2 (SCREEN) VOLTAGE. 117 max. volts

PLATE DISSIPATION. 10 max. watts

GRID-No.2 DISSIPATION. 1.25 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

Typical Operation and Characteristics:

Plate Voltage. 110 200 volts

Grid-No.2 Voltage. 110 110 volts

Grid-No.1 Voltage. -7.5 -8 volts

Peak A-F Grid No.1 Voltage. 7.5 8 volts

Zero-Signal Plate Current. 49 50 ma

Max.-Signal Plate Current. 50 55 ma

Zero-Signal Grid-No.2 Current. 4 1.5 ma

Max.-Signal Grid-No.2 Current. 8.5 6.0 ma

Plate Resistance (Approx.) 13000 35000 ohms

Transconductance 8000 8250 μ mos

Load Resistance. 2000 3000 ohms

Total Harmonic Distortion. 10 10 %

Max.-Sig. Power Output 2.1 4.3 watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Res.	{ fixed bias	0.1	. . megohm
	{ cathode bias	0.5	. . megohm

DEC. 30, 1947

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



50B5

BEAM POWER AMPLIFIER

MINIATURE TYPE

50B5

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 50 ac or dc volts

Current. 0.15 amp.

Direct Interelectrode Capacitances (Approx.):⁰Grid-No.1 to Plate . . . 0.5 μf Input. 13 μf Output. 6.5 μf **Mechanical:**

Mounting Position. Any

Maximum Overall Length 2-5/8"

Maximum Seated Length. 2-3/8"

Length from Base Seat

to Bulb Top (excluding tip). 2" $\pm$ 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Miniature Button 7-Pin

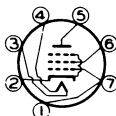
Basing Designation for BOTTOM VIEW 7BZ

Pin 1-Grid No.1

Pin 2-Cathode,

Grid No.3

Pin 3-Heater



Pin 4-Heater

Pin 5-Plate

Pin 6-Grid No.2

Pin 7-Grid No.1

CLASS A₁ AMPLIFIER**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 117 max. volts

GRID-No.2 (SCREEN) VOLTAGE 117 max. volts

PLATE DISSIPATION. 5.5 max. watts

GRID-No.2 DISSIPATION. 1.25 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

Typical Operation and Characteristics:

Plate Voltage. 110 . . . volts

Grid-No.2 Voltage. 110 . . . volts

Grid-No.1 Voltage. -7.5 . . . volts

Peak A-F Grid-No.1 Voltage 7.5 . . . volts

Zero-Signal Plate Current. 49 . . . ma.

Max.-Signal Plate Current. 50 . . . ma.

⁰With no external shield.

JAN. 2, 1946

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

50B5



50B5

BEAM POWER AMPLIFIER

Zero-Signal Grid-No.2 Current (Approx.) . .	4	. . . ma.
Max.-Signal Grid-No.2 Current (Approx.) . .	8.5	. . . ma.
Plate Resistance (Approx.)	14000	. . ohms
Transconductance	7500	. . μ mhos
Load Resistance	2500	. . ohms
Total Harmonic Distortion	9	. . . %
Max.-Sig. Power Output	1.9	. . watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Res. . .	{	fixed bias .	0.1	. megohm
		cathode bias .	0.5	. megohm

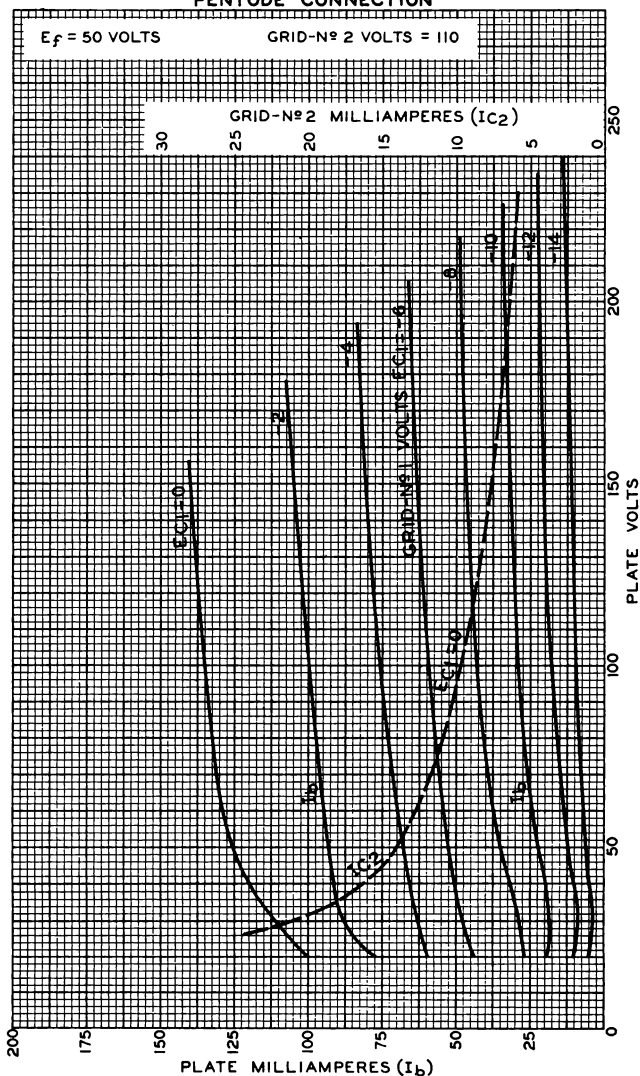
JAN. 2, 1946

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



50B5

AVERAGE PLATE CHARACTERISTICS
PENTODE CONNECTION

OCT. 8, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

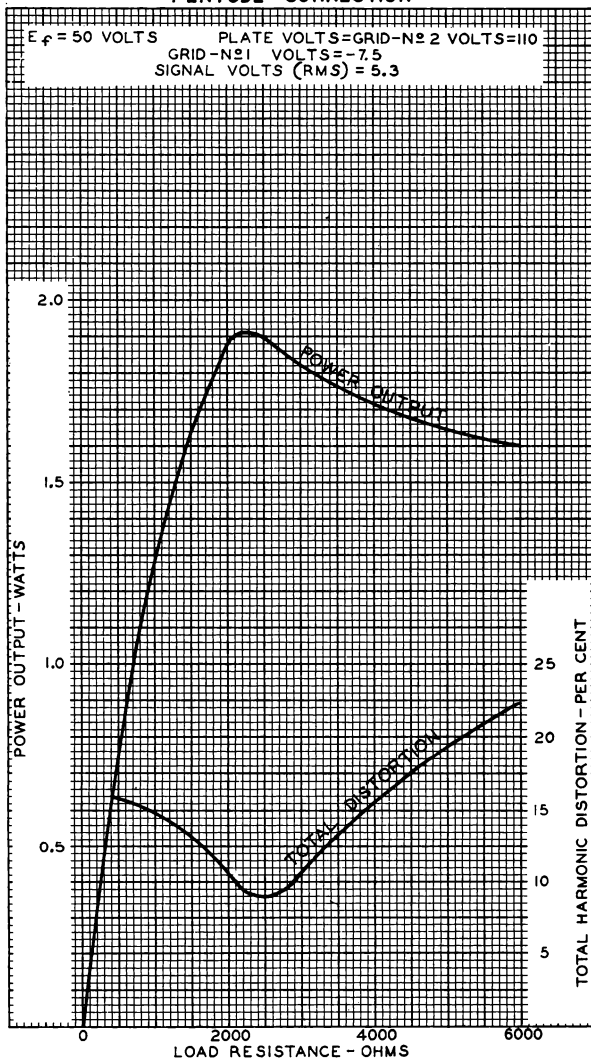
92CM-6603

50B5

50B5



50B5

OPERATION CHARACTERISTICS
PENTODE CONNECTION

OCT. 24, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6612



50C5

50C5

BEAM POWER TUBE

MINIATURE TYPE

Except for a different basing arrangement, which simplifies the problem of meeting Underwriters' Laboratories requirements in the design of ac/dc receivers, the 50C5 is similar to the miniature type 50B5.

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage 50 ac or dc volts

Current 0.15 amp

Direct Interelectrode Capacitances (Approx.):^oGrid No.1 to plate 0.55 . . . μ fGrid No.1 to cathode & grid No.3,
grid No.2, and heater. 13 . . . μ fPlate to cathode & grid No.3,
grid No.2, and heater. 9 . . . μ f**Mechanical:**

Mounting Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip) . . 2" $\pm$ 3/32"

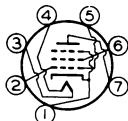
Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 7CV

Pin 1 - Cathode,
Grid No.3
Pin 2 - Grid No.1
Pin 3 - Heater



Pin 4 - Heater
Pin 5 - Grid No.1
Pin 6 - Grid No.2
Pin 7 - Plate

AMPLIFIER - Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE 135 max. volts

GRID-No.2 (SCREEN) VOLTAGE 117 max. volts

PLATE DISSIPATION 5.5 max. watts

GRID-No.2 INPUT 1.25 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . . 180 max. volts

Heater positive with respect to cathode. . . 180 max. volts

BULB TEMPERATURE (At hottest point)^o . . . 250 max. ^oC^o without external shield.

♦ High ambient temperature and shielding may necessitate a reduction in operating dissipation. When tube shields are used it is advisable to paint both inside and outside surfaces of tube shield a dull black and to provide ventilation slots to reduce operating temperature.

←Indicates a change.

JAN. 3, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

50C5



50C5

BEAM POWER TUBE

Typical Operation and Characteristics:

Plate Voltage.	110	volts
Grid-No.2 Voltage.	110	volts
Grid-No.1 (Control-Grid) Voltage	-7.5	volts
Peak AF Grid-No.1 Voltage.	7.5	volts
Zero-Signal Plate Current.	49	ma
Max.-Signal Plate Current.	50	ma
Zero-Signal Grid-No.2 Current.	4	ma
Max-Signal Grid-No.2 Current	8.5	ma
Plate Resistance (Approx.)	1000	ohms
Transconductance	7500	μ mhos
Load Resistance.	2500	ohms
Total Harmonic Distortion.	9	%
Max.-Signal Power Output	1.9	watts

Maximum Circuit Values (For maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

Curves shown under type 50B5 also apply to the 50C5



50C6-G

50C6-G

BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

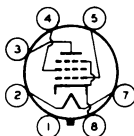
Heater, for Unipotential Cathode:

Voltage. 50 ac or dc volts
 Current. 0.15 amp

Mechanical:

Mounting Position. Any
 Maximum Overall Length. 4-5/8"
 Seated Length. 3-7/8" + 3/16" - 5/16"
 Maximum Diameter. 1-13/16"
 Bulb ST-14
 Base Medium-Shell Octal 7-Pin
 Basing Designation for BOTTOM VIEW G-7AC

Pin 1-No
 Connection
 Pin 2-Heater
 Pin 3-Plate
 Pin 4-Grid No.2



Pin 5-Grid No.1
 Pin 7-Heater
 Pin 8-Cathode,
 Grid No.3

AF POWER AMPLIFIER-Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 200 max. volts
 GRID-No.2 (SCREEN) VOLTAGE 135 max. volts
 PLATE DISSIPATION. 12.5 max. watts
 GRID-No.2 INPUT. 1.75 max. watts

Typical Operation and Characteristics:

Plate Voltage.	135	200	volts
Grid-No.2 Voltage.	135	135	volts
Grid-No.1 (Control-Grid) Voltage	-13.5	-14	volts
Peak AF Grid-No.1 Voltage.	13.5	14	volts
Zero-Signal Plate Current.	58	61	ma
Max.-Signal Plate Current.	60	66	ma
Zero-Signal Grid-No.2 Current.	3.5	2.2	ma
Max.-Signal Grid-No.2 Current.	11.5	9.0	ma
Plate Resistance (Approx.)	9300	18300	ohms
Transconductance	7000	7100	μmhos
Load Resistance.	2000	2600	ohms
Total Harmonic Distortion.	10	10	%
Max.-Signal Power Output	3.6	6.0	watts

Curves shown under Type 6Y6-G also apply to the 50C6-G.



50L6-GT

50L6-GT
★

BEAM POWER AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	50	a-c or d-c volts
Current	0.15	amp.
Maximum Overall Length		3-5/16"
Maximum Seated Height		2-3/4"
Maximum Diameter		1-5/16"
Bulb		T-9
Base	Intermediate Shell Octal 7-Pin	
Pin 1—No Connection		Pin 5—Grid
Pin 2—Heater		Pin 7—Heater
Pin 3—Plate		Pin 8—Cathode
Pin 4—Screen		
Mounting Position		Any



BOTTOM VIEW (G-7AC)

AMPLIFIER

Plate Voltage	200 max.	volts
Screen Voltage	117 max.	volts
Plate Dissipation	10 max.	watts
Screen Dissipation	1.25 max.	watts
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>		
Plate	110	200 volts
Screen	110	110 volts
Grid *	-7.5	-8 volts
Peak A-F Grid Voltage	7.5	8 volts
Zero-Sig. Plate Cur.	49	50 ma.
Max.-Sig. Plate Cur.	50	55 ma.
Zero-Sig. Screen Cur.	4	2 approx. ma.
Max.-Sig. Screen Cur.	11	7 approx. ma.
Plate Resistance	13000	30000 approx. ohms
Transconductance	9000	9500 μ mhos
Load Resistance	2000	3000 ohms
Total Harmonic Dist.	10	10 %
Power Output	2.1	4.3 watts

* In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

* The type of input coupling should not introduce too much resistance in the grid circuit. Transformer- or impedance-coupling devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not to exceed 0.5 megohm.

Curves under type 25L6-GT also apply to the 50L6-GT.

← Indicates a change.

Sept. 2, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

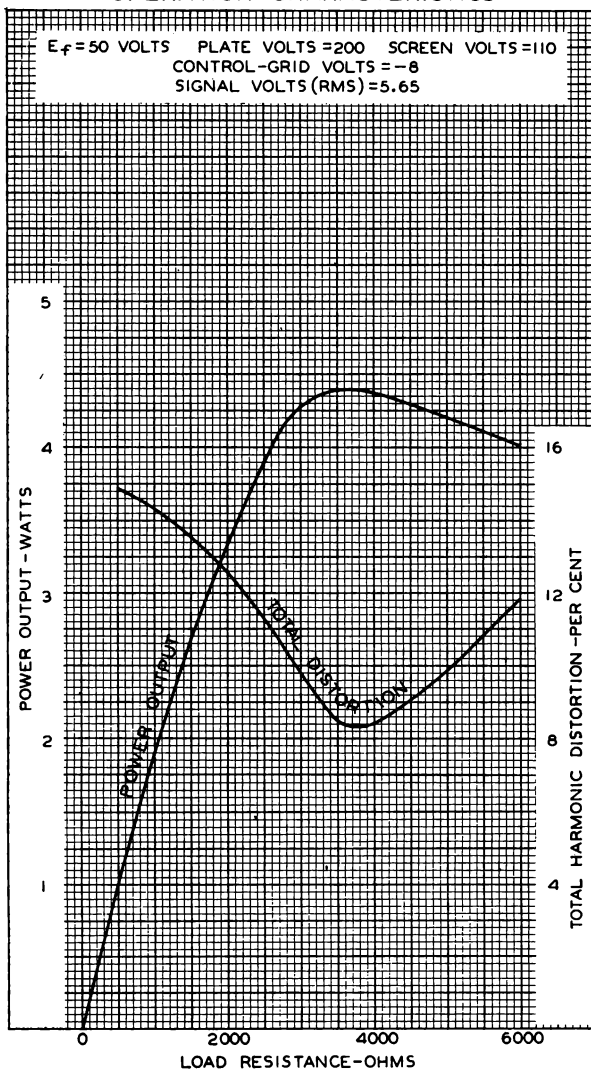
DATA

50L6-GT



50L6-GT

OPERATION CHARACTERISTICS



AUG. 7, 1941

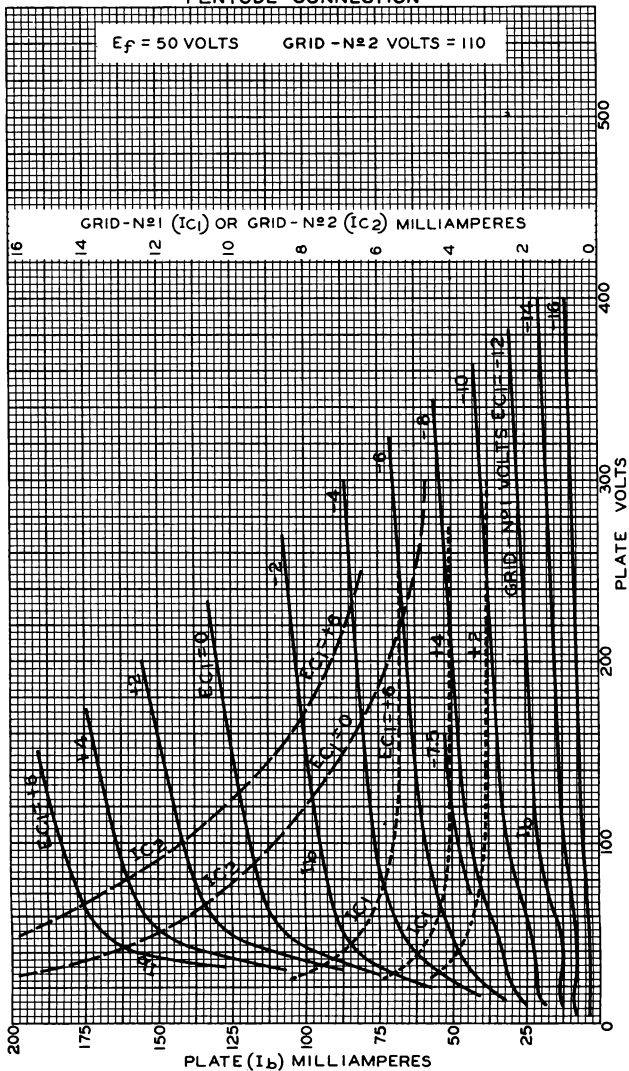
RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6308



50L6-GT

50L6-GT AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



JAN. 27, 1950

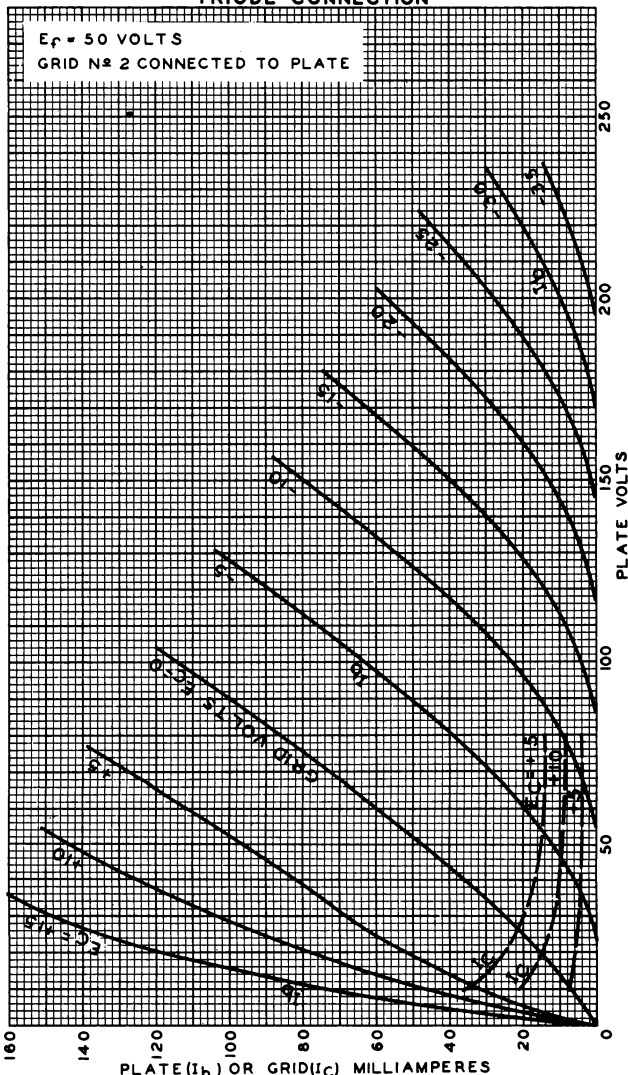
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6314R1

50L6-GT



50L6-GT AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



APRIL 6, 1948

TUBE DEPARTMENT

92CM-6316R1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



50X6

VACUUM RECTIFIER-DOUBLER

50X6

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathodes:

Voltage. 50 ac or dc volts

Current. 0.150 amp

Mechanical:

Mounting Position. Any

Maximum Overall Length. 3-5/32"

Maximum Seated Length. 2-5/8"

Maximum Diameter. 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW. 7AJ

Pin 1-Heater

Pin 2-Cathode of

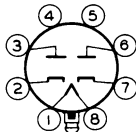
Unit No.2

Pin 3-Plate of

Unit No.2

Pin 4-No

Connection



Pin 5-No Connection

Pin 6-Plate of

Unit No.1

Pin 7-Cathode of

Unit No.1

Pin 8-Heater

Plug - Base Shell

RECTIFIER OR DOUBLER**Maximum Ratings, Design-Center Values:**

PEAK INVERSE PLATE VOLTAGE 700 max. volts

PEAK PLATE CURRENT PER PLATE 450 max. ma

DC OUTPUT CURRENT PER PLATE. 75 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . 350 max. volts

Heater positive with respect to cathode. . 350 max. volts

**Typical Operation as Half-Wave Rectifier with
Capacitor-Input to Filter:^o**AC Plate-Supply Voltage
per Plate (RMS) . . . 117 150 235 voltsFilter-Input Capacitor 16 16 16 μ f

Min. Total Effective Plate-

Supply Impedance per Plate . . . 15 40 100 ohms

DC Output Current per Plate. 75 75 75 ma

Typical Operation as Voltage Doubler:Half-Wave Full-WaveAC Plate-Supply Voltage
per Plate (RMS) . . . 117 117 voltsFilter-Input Capacitor
per Plate . . . 16 16 μ f

Min. Total Effective Plate-

Supply Impedance per Plate . . 30 15 ohms

DC Output Current. 75 75 ma

^o in half-wave rectifier service, the two units may be used separately or in parallel.

FEB. 1, 1950

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

50Y6-GT



50Y6-GT

VACUUM RECTIFIER-DOUBLER

Heater, for Unipotential Cathodes:

Voltage. 50 ac or dc volts

Current. 0.15 amp

*The 50Y6-GT is the same as the 25Z6-GT except for
heater rating.*

FEB. 1, 1950

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



50Y7-GT

50Y7-GT

VACUUM RECTIFIER-DOUBLER

GENERAL DATA

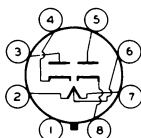
Electrical:

	Without Panel Lamp	With No. 40 or No. 47 Panel Lamp	
Heater, for Unipotential Cathode:			
Voltage (AC or DC):			
Entire Heater (pins 2 & 7)	50	46 . .	volts
Panel-Lamp Section (pins 6 & 7)	7.5	5.5 . .	volts
Current { between pins 2 & 7	0.15	- . .	amp
{ between pins 2 & 6	-	0.15 . .	amp

Mechanical:

Mounting Position.	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length.	2-3/4"
Maximum Diameter	1-9/32"
Bulb	T-9
Base	Intermediate-Shell Octal 8-Pin
Basing Designation for BOTTOM VIEW	G-8AN

Pin 1—No Connection
Pin 2—Heater
Pin 3—Plate No. 2
Pin 4—Cathode No. 2



Pin 5—Plate No. 1
Pin 6—Heater Tap
Pin 7—Heater
Pin 8—Cathode No. 1

RECTIFIER OR DOUBLER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	700 max.	volts
PEAK PLATE CURRENT PER PLATE	450 max.	ma
DC OUTPUT CURRENT PER PLATE		
With Panel Lamp & { No Shunting Resistor.	60 max.	ma
{ Shunting Resistor*.	65 max.	ma
Without Panel Lamp	75 max.	ma
PANEL-LAMP-SECTION VOLTAGE (RMS):		
When panel lamp fails.	15 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	350 max.	volts
Heater positive with respect to cathode.	350 max.	volts

Typical Operation with No. 40 or No. 47 Panel Lamp in

Half-Wave Rectifier Circuit with Capacitor-Input Filter:

AC Plate-Supply Volt. per Plate (RMS).	117	150	235	volts
Filter-Input Capacitor	16	16	16	μf
Min. Total Effect. Plate—				
Supply Imped. per Plate.	15	40	100	ohms
Panel Lamp Shunting Resistor	250	250	250	ohms
DC Output Current per Plate.	65	65	65	ma

* Max. value of this resistor is 250 ohms for dc output current of 65 ma.

FEB. 1, 1950

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

50Y7-GT



50Y7-GT

VACUUM RECTIFIER-DOUBLER

**Typical Operation with No.40 or No.47 Panel Lamp in
Voltage-Doubler Circuit:**

	Half-Wave	Full-Wave	
AC Plate Supply Voltage per Plate (RMS)	117	117	volts
Filter-Input Capacitor	16	16	μ f
Min. Total Effect. Plate- Supply Imped. per Plate.	30	15	ohms
Panel Lamp Shunting Resistor . . .	250	250	ohms
DC Output Current per Plate. . . .	65	65	ma

**Typical Operation Without Panel Lamp in
Half-Wave Rectifier Circuit with Capacitor-Input Filter:^o**
Values are for both units connected in parallel

AC Plate Supply Voltage (RMS)	117	150	235	volts
Filter-Input Capacitor	16	16	16	μ f
Min. Total Effect. Plate- Supply Imped. per Plate.	15	40	100	ohms
Total DC Output Current.	150	150	150	ma
DC Output Voltage at Input to Filter (Approx.):				
At half-load current (75 ma.)	115	-	255	volts
At full-load current (150 ma.)	80	-	200	volts
Voltage Regulation (Approx.):				
Half-load to full-load current	35	-	55	volts

**Typical Operation Without Panel Lamp in
Full-Wave Voltage-Doubler Circuit:^o**

AC Plate Supply Voltage per Plate (RMS)	117	volts
Filter-Input Capacitor	16	μ f
Min. Total Effective Plate- Supply Impedance per Plate	15	ohms
DC Output Current.	75	ma
DC Output Voltage at Input to Filter (Approx.):		
At half-load current (37.5 ma.)	250	volts
At full-load current (75 ma.)	205	volts
Voltage Regulation (Approx.):		
Half-load to full-load	45	volts

^o Plate current must not flow through heater section between pins 6 and 7.

FEB. 1, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



50Y6-GT/G

50Y6-GT/G
50Z7-G**HIGH-VACUUM RECTIFIER-DOUBLER**

Heater	Coated Unipotential Cathodes	
Voltage	50	a-c or d-c volts
Current	0.15	amp.

The 50Y6-GT/G is the same as the 25Z6-GT/G except for heater rating.

50Z7-G

HIGH-VACUUM RECTIFIER-DOUBLER

Heater	Coated Unipotential Cathodes	
Voltage	Entire Heater (pins #2 & #7)	50 a-c or d-c volts
	Panel Lamp Section (pins #6 & #7) with 0.15 amp. between pins #2 & #7	2.0 a-c or d-c volts
Current		0.15 amp.

Maximum Overall Length	4-1/8"
Maximum Seated Height	3-9/16"
Maximum Diameter	1-9/16"
Bulb	ST-12

Base	Small Shell Octal 8-Pin	
Pin 1 - No Connection	Pin 5 - Plate #1	
Pin 2 - Heater	Pin 6 - Heater Tap	
Pin 3 - Plate #2	Pin 7 - Heater	
Pin 4 - Cathode #2	Pin 8 - Cathode #1	
Mounting Position	Any	



BOTTOM VIEW (G-8AN)

Maximum Ratings Are Design-Center Values

RECTIFIER OR DOUBLER

Peak Inverse Plate Voltage	700 max.	volts
Peak Plate Current per Plate	400 max.	ma.
D-C Output Current per Plate with Panel Lamp	65 max.	ma.
D-C Heater-Cathode Potential	350 max.	volts
Panel-Lamp Sect. Volt. (between pins #6 & #7)	2.5 max.	volts

*Typical Operation as Half-Wave Rectifier-
With #292 or #292A Panel Lamp:**

Heater Cur. (between pins #2 & #6)	0.15	0.15	amp.
Heater Volt. (between pins #2 & #7) approx.	50	50	volts
A-C Plate Supply Voltage per Plate (RMS)	117	235	volts
Min. Total Effect. Plate-Supply Imped. per Plate	15	100	ohms
D-C Output Current per Plate	65	65	ma.

*Typical Operation as Voltage Doubler-
With #292 or #292A Panel Lamp:*

Heater Cur. (between pins #2 & #6)	0.15	amp.
Heater Voltage (between pins #2 & #7) approx.	50	volts
A-C Plate Supply Voltage per Plate (RMS)	117	volts
Min. Total Effect. Plate-Supply Imped. per Plate	15	ohms
D-C Output Current	65	ma.

* In half-wave rectifier service, the two units may be used separately or in parallel.

AUG. 2, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

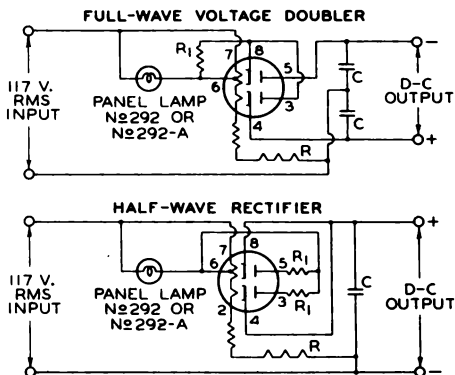
DATA

50Z7-G



50Z7-G

HIGH-VACUUM RECTIFIER-DOUBLER



C = Filter Condenser.

R = Heaters of Other Tubes in Series with Voltage-Dropping Resistor.

R₁ = Protective Resistor.

NOTE: Drop across R and all heaters (with panel lamp) should equal 117 volts at 0.15 amp.

The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.

AUG. 2, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



RCA-53

53

CLASS B TWIN AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	2.5	a-c or d-c volts
Current	2.0	amp.

For additional data and curves, see Types 6N7 and 6A6, and the RESISTANCE-COUPLED AMPLIFIER CHART. The operating conditions and characteristics of the 53 are identical with those of the 6N7 and 6A6 except for heater voltage and current. The physical characteristics of the 53 are the same as those of the 6A6. ←

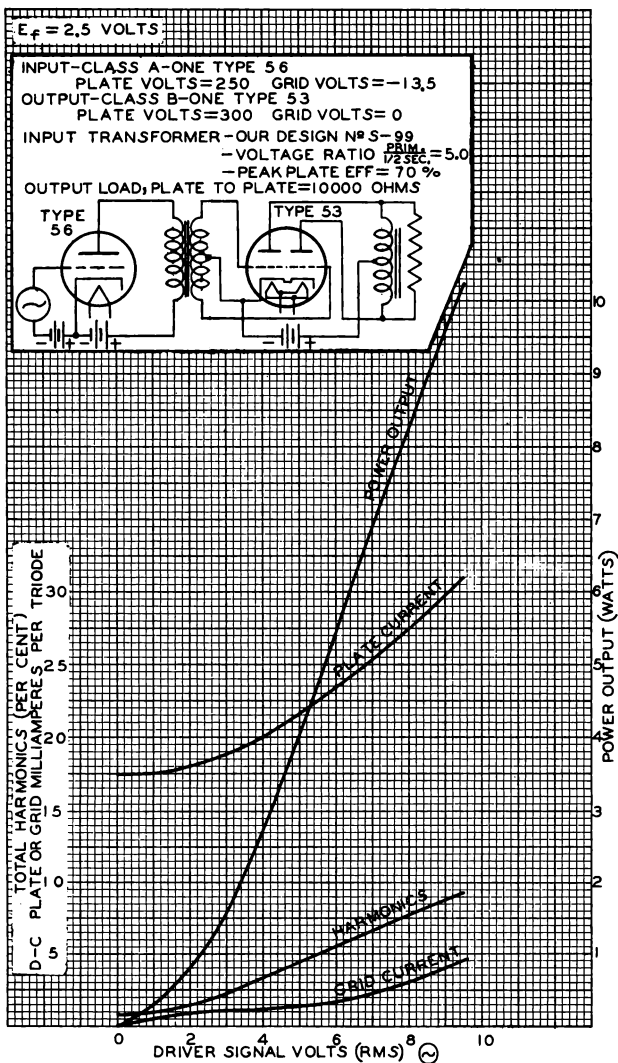
← Indicates a change

APRIL 5, 1937

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

OPERATION CHARACTERISTICS





55

555
765**TWIN DIODE—MEDIUM-MU TRIODE**

Heater, for Unipotential Cathode:

Voltage. 2.5 ac or dc volts

Current. 1.0 amp

Type 55 is the same as Type 85 except for heater rating.

56

MEDIUM-MU TRIODE

Heater, for Unipotential Cathode:

Voltage. 2.5 ac or dc volts

Current. 1.0 amp

Direct Interelectrode Capacitances:^oGrid to Plate. 3.2 μ fGrid to Cathode. 3.2 μ fPlate to Cathode. 2.4 μ f^o Without external shield.*Type 56 is the same as Type 76 except for heater rating
and direct interelectrode capacitances.*

57

SHARP-CUTOFF PENTODEGENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 2.5 ac or dc volts

Current. 1.0 amp

Direct Interelectrode Capacitances:

Pentode Connection:

Grid No.1 to Plate^o . . 0.007 max. μ fInput^{oo} 5 μ fOutput^{oo} 6.5 μ fTriode Connection:^{*oo}Grid No.1 to Plate . . . 2 μ fGrid No.1 to Cathode . . 3 μ fPlate to Cathode . . . 10.5 μ f**Mechanical:**

Mounting Position. Any

Maximum Overall Length 4-15/16"

Seated Length. 4-3/16" $\pm$ 1/8"

Maximum Diameter 1-9/16"

Bulb ST-12

(continued on next page)

^o With external shield connected to cathode.^{oo} Without external shield.^{*} With grid No.2 and grid No.3 connected to plate.

JUNE 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

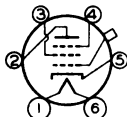


57

SHARP-CUTOFF PENTODE

Cap. Small
 Base Small-Shell Small 6-Pin
 Basing Designation for BOTTOM VIEW 6F

Pin 1-Heater
 Pin 2-Plate
 Pin 3-Grid No.2
 Pin 4-Grid No.3



Pin 5-Cathode
 Pin 6-Heater
 Cap - Grid No.1

Maximum Ratings, Characteristics, Typical Operating Conditions, and Curves are the same as for Type 6J7.

58

REMOTE-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 2.5 ac or dc volts

Current 1.0 amp

Direct Interelectrode Capacitances:

Grid No.1 to Plate^o . . 0.007 $\mu\mu\text{f}$

Input 4.7 $\mu\mu\text{f}$

Output 6.3 $\mu\mu\text{f}$

^o With external shield connected to cathode.

Mechanical:

Mounting Position Any

Maximum Overall Length 4-15/16"

Seated Length 4-3/16" $\pm 1/8$ "

Maximum Diameter 1-9/16"

Bulb ST-12

Cap. Small

Base Small-Shell Small 6-Pin

Basing Designation for BOTTOM VIEW 6F

Pin 1-Heater
 Pin 2-Plate
 Pin 3-Grid No.2
 Pin 4-Grid No.3



Pin 5-Cathode
 Pin 6-Heater
 Cap - Grid No.1

Maximum Ratings, Characteristics, and Typical Operating Conditions are the same as for Type 6U7-G.

Curves for Type 58 are the same as those for Types 6U7-G and 6D6.

For additional data, see RESISTANCE-COUPLED AMPLIFIER CHARTS at the front of this Section.

JUNE 15, 1948

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



70L7-GT

70L7-GT
★**RECTIFIER-BEAM POWER AMPLIFIER**

Heater	Coated Unipotential Cathodes	
Voltage	70	a-c or d-c volts
Current	0.15	amp.
Maximum Overall Length		3-7/16" ←
Maximum Seated Height		2-7/8" ←
Maximum Diameter		1-5/16"
Bulb		T-9
Base		Intermed. Sh. Octal 8-Pin
Pin 1-Rectifier Cath.		Pin 5-Amplifier Grid
Pin 2-Heater		Pin 6-Amplifier Cath.
Pin 3-Amplifier Plate		Pin 7-Heater
Pin 4-Amplifier Screen		Pin 8-Rectifier Plate
Mounting Position	BOTTOM VIEW (8AA)	Any

AMPLIFIER UNIT

Plate Voltage	117 max.	volts	←
Screen Voltage	117 max.	volts	←
Plate Dissipation	5.0 max.	watts	←
Screen Dissipation	1.0 max.	watt	←
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>			
Plate	110	volts	←
Screen	110	volts	←
Grid	-7.5	volts	←
Peak A-F Grid Voltage	7.5	volts	
Zero-Signal Plate Cur.	40	ma.	
Max.-Signal Plate Cur.	43	ma.	
Zero-Signal Screen Cur.	3 approx.	ma.	
Max.-Signal Screen Cur.	6 approx.	ma.	
Plate Resistance	15000	ohms	
Transconductance	7500	μmhos	
Load Resistance	2000	ohms	
Total Harmonic Distortion	10	%	
Max.-Signal Power Output	1.8	watts	

RECTIFIER UNIT

Peak Inverse Voltage	350 max.	volts	←
Peak Plate Current	420 max.	ma.	←
D-C Heater-Cathode Potential	175 max.	volts	←
<i>With Condenser-Input Filter:</i>			
A-C Plate Voltage (RMS)	117 max.	volts	
Total Effective Plate-Supply Impedance	15 min.	ohms	←
D-C Output Current	70 max.	ma.	

- It is recommended that the potential difference between heater and cathode of the amplifier unit be kept as low as possible by connecting pin #2 to the side of the line opposite that to which pins #7 & #8 are connected.
- * The type of input coupling used should not introduce too much resistance in the grid circuit. Transformer- or impedance-coupling devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not higher than 0.5 megohm.
- ▲ When a filter-input condenser larger than 40 μf is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.

← Indicates a change.

Dec. 1, 1941

RCA RADIONRON DIVISION
RCA MANUFACTURING COMPANY, INC.

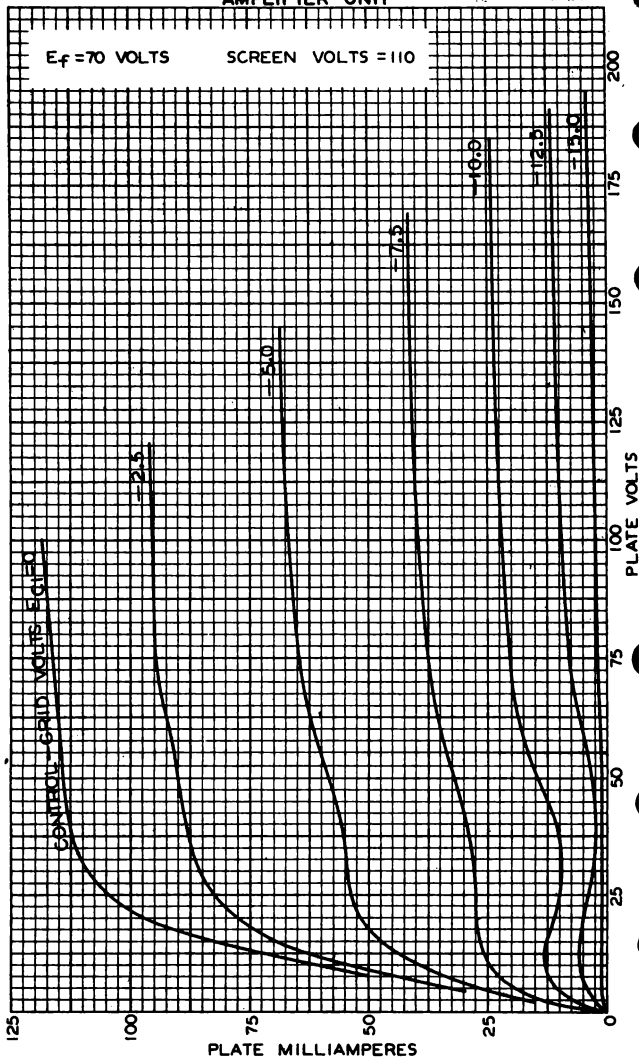
DATA

70L7-GT



70L7-GT

AVERAGE PLATE CHARACTERISTICS AMPLIFIER UNIT



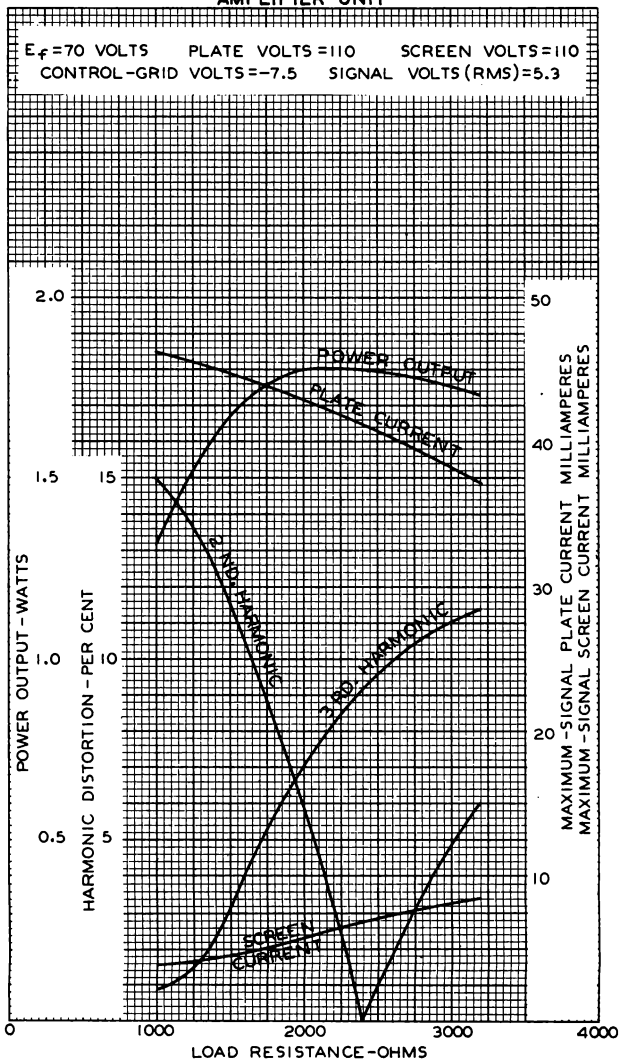
SEPT. 26, 1941

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6323



70L7-GT

OPERATION CHARACTERISTICS
AMPLIFIER UNIT

OCT. 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

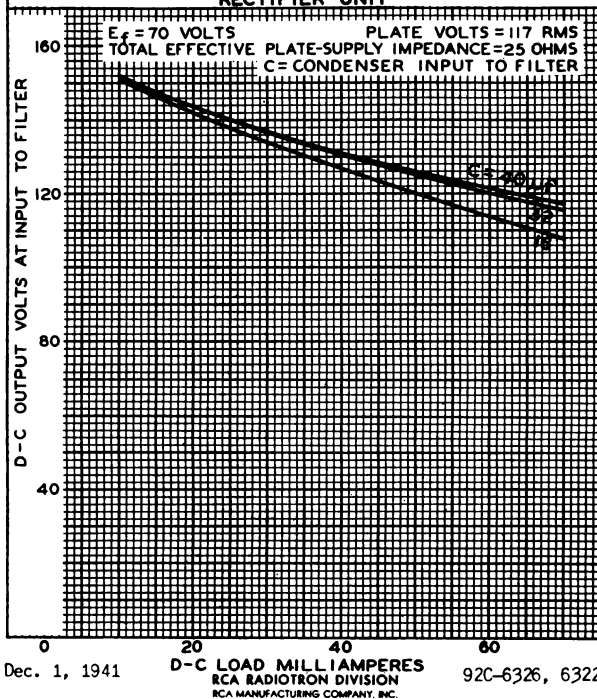
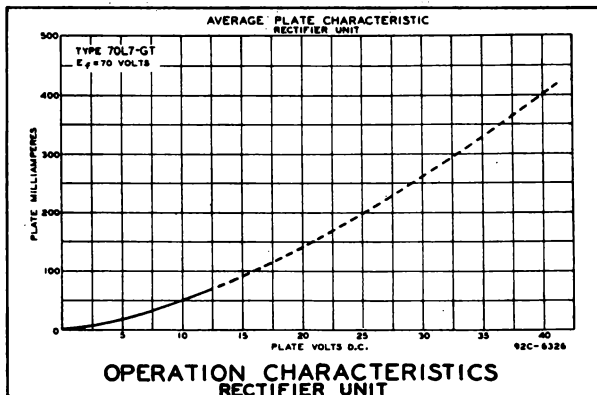
92C-6324

70L7-GT



70L7-GT

RECTIFIER-BEAM POWER AMPLIFIER



Dec. 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6326, 6322



7-1-A

RCA-71-A POWER AMPLIFIER

Filament	Coated	
Voltage	5.0	a-c or d-c volts
Current	0.25	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	7.5	μpf
Grid to Filament	3.2	μpf
Plate to Filament	2.9	μpf
Maximum Overall Length		4-11/16"
Maximum Diameter	(2) (3)	1-13/16"
Bulb		ST-14
Base		Medium 4-Pin Bay.
Pin 1-Filament+	(1) (4)	Pin 3-Grid
Pin 2-Plate		Pin 4-Filament-

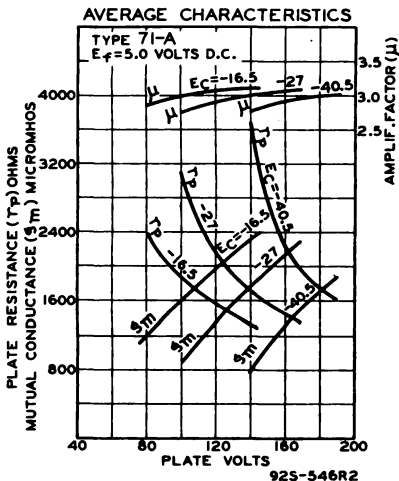
BOTTOM VIEW

AMPLIFIER (Class A)

Operating Conditions and Characteristics:

Filament	5.0	5.0	5.0	d-c volts
Plate	90	135	180 max.	volts
Grid	-16.5	-27	-40.5	volts
Amp. Fact.	3	3	3	
Plate Res.	2170	1820	1750	ohms
Mut. Cond.	1400	1650	1700	μmhos
Plate Cur.	10	17.3	20	ma.
Load Res.	3000	3000	4800	ohms
U.P.O.	125	400	790	mw.

A grid coupling resistor, if used, should not exceed 0.5 megohm.



JULY 1, 1935

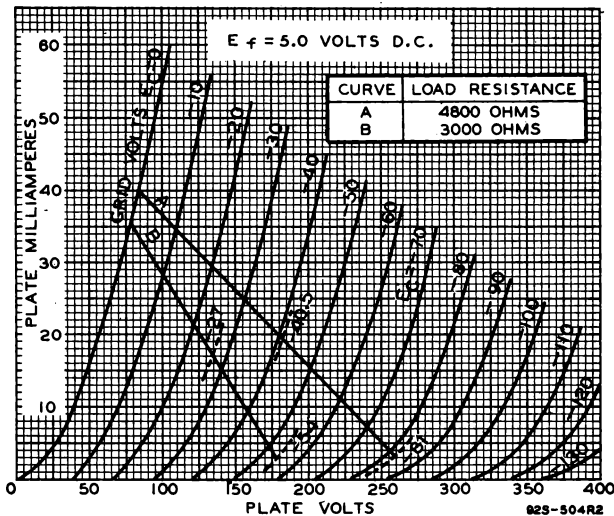
RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

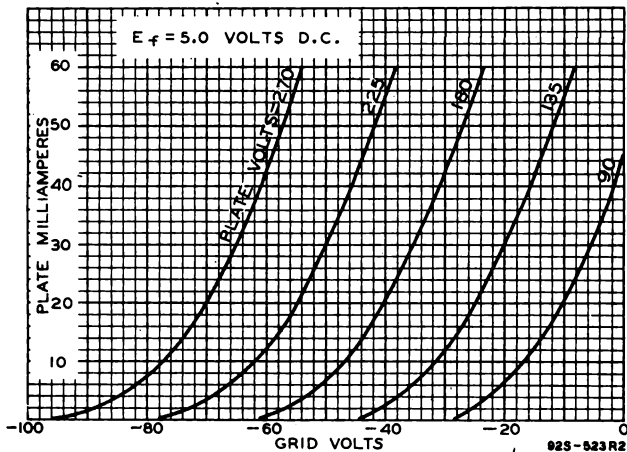
71-A

Cunningham
Radiofron
 RCA-71-A

AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS



SEPT. 13, 1935

RCA RADIORON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-4477



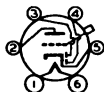
75



75

DUPLEX-DIODE HIGH-MU TRIODE

Heater ■	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances (approx.):		
<i>Triode Unit</i>		
Grid to Plate	1.7	μmf
Grid to Cathode	1.7	μmf
Plate to Cathode	3.8	μmf
Overall Length	4-9/32" to 4-17/32"	
Seated Height	3-21/32" to 3-29/32"	←
Maximum Diameter	1-9/16"	
Bulb	ST-12	
Cap	Small Metal	
Base	Small 6-Pin	
Pin 1-Heater	Pin 5-Cathode	
Pin 2-Triode Plate	Pin 6-Heater	
Pin 3-Diode Plate #2	Cap - Triode Grid	
Pin 4-Diode Plate #1		
Mounting Position	Any	



BOTTOM VIEW (6G)

AMPLIFIER

Plate Voltage , 250 max. volts

Characteristics and Curves are the same as for Type 6SQ7. For Typical Operating Conditions see RESISTANCE-COUPLED AMPLIFIER CHART. Diode Curves under Type 6B7 also apply to the 75.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

← Indicates a change.

Sept. 2, 1941

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

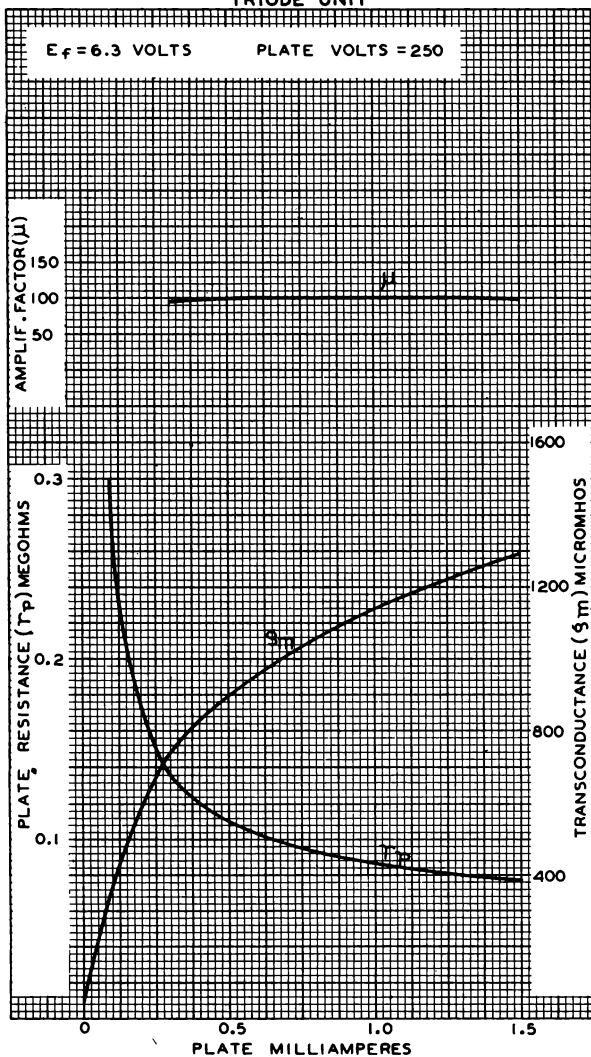
DATA

75



75

AVERAGE CHARACTERISTICS TRIODE UNIT



JULY 31, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-5284R1



76

MEDIUM-MU TRIODEGENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp

Direct Interelectrode Capacitances:⁰Grid to Plate. 2.8 $\mu\mu\text{f}$ Grid to Cathode. 3.5 $\mu\mu\text{f}$ Plate to Cathode. 2.5 $\mu\mu\text{f}$ ⁰ With no external shield.**Mechanical:**

Mounting Position. Any

Maximum Overall Length. 4-3/16"

Seated Length. 3-3/8" $\pm$ 3/16"

Maximum Diameter. 1-9/16"

Bulb ST-12

Base Small-Shell Small 5-Pin

Basing Designation for BOTTOM VIEW. 5A

Pin 1 - Heater

Pin 2 - Plate

Pin 3 - Grid

Pin 4 - Cathode

Pin 5 - Heater

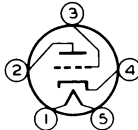
AMPLIFIER - Class A₁**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 250 max. volts

PLATE DISSIPATION. 1.4 max. watts ←

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts ←

Typical Operation and Characteristics:

Plate Voltage. 100 250 . . volts

Grid Voltage. -5 -13.5 . . volts

Amplification Factor. 13.8 13.8

Plate Resistance. 12000 9500 . . ohms

Transconductance. 1150 1450 . . μmhos

Plate Current. 2.5 5 . . ma

Maximum Circuit Values:

Grid-Circuit Resistance. 1 max. megohm

← Indicates a change.

JUNE 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



MEDIUM-MU TRIODE

DETECTOR**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE.	250 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation as Biased Detector:

Plate Voltage.	100	250	..	volts
Grid Voltage (Approx.)	-8	-20	..	volts
Plate Current.	Adjust to 0.2 ma. with no input signal			
Cathode-Bias Resistor [▲]	{ 30000 30000 }		{ to to }	
	{ 150000 150000 }		{ ohms }	

Typical Operation as Grid-Resistor Detector:

Plate Voltage.	45	..	volts
Grid	Return to cathode		
Grid Resistor.	1 to 5	megohms	
Grid Capacitor	250	..	μ mf

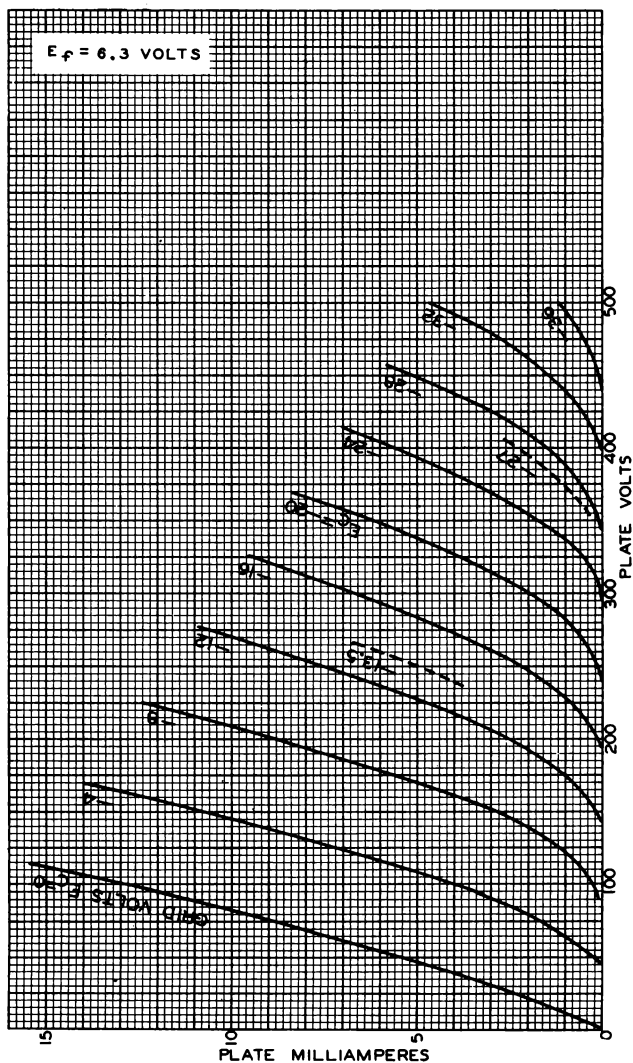
[▲] Not critical.



76

76

AVERAGE PLATE CHARACTERISTICS



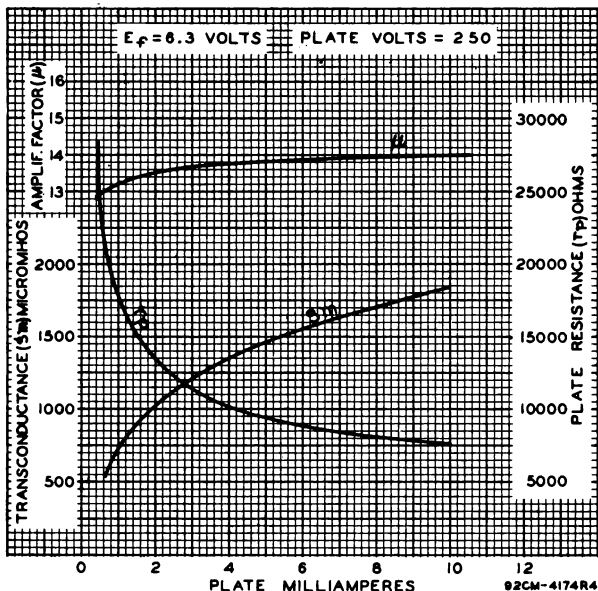
MAR. 5, 1934

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

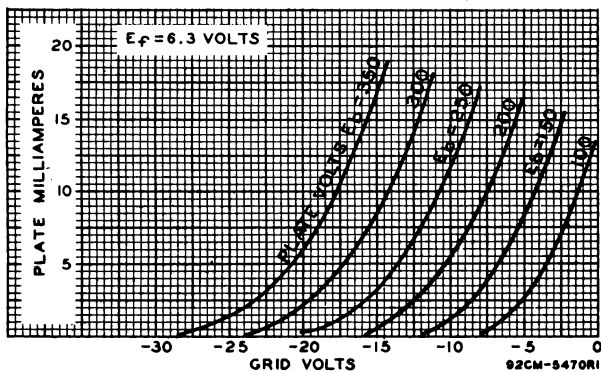
92CM-4175R2



AVERAGE CHARACTERISTICS



AVERAGE CHARACTERISTICS



MAY 19, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6983



77

**TRIPLE-GRID DETECTOR AMPLIFIER**

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	0.007 max.	μ f
Input	4.7	μ f
Output	11	μ f
Overall Length	4-9/32" to 4-17/32"	
Seated Height	3-21/32" to 3-29/32"	
Maximum Diameter	1-9/16"	
Bulb	ST-12	
Cap	Small Metal	
Base	Small 6-Pin	
Pin 1-Heater		Pin 5-Cathode
Pin 2-Plate		Pin 6-Heater
Pin 3-Screen		Cap -Grid
Pin 4-Suppressor		
Mounting Position	BOTTOM VIEW (6F)	Any

AMPLIFIER

Plate Voltage	300 max.	volts
Screen Voltage	100 max.	volts
Screen Supply Voltage	300 max.	volts
Grid Voltage	0 min.	volts
Plate Dissipation	0.75 max.	watt
Screen Dissipation	0.1 max.	watt

Typical Operation and Characteristics - Class A₁ Amplifier:

Plate	100	250	volts
Screen	60	100	volts
Grid *	-1.5	-3	volts
Suppressor	Connected to cathode at socket		
Plate Res. (approx.)	0.6	#	megohm
Transcond.	1100	1250	μ mhos
Grid Bias for cathode-current cut-off	-5.5	-7.5	volts
Plate Cur.	1.7	2.3	ma.
Screen Cur.	0.4	0.5	ma.

DETECTORTypical Operation as Biased Detector:

Plate Supply	100	250	250	volts
Screen	36	50	100 max.	volts
Grid	-1.95	-1.95	-8.3	volts
Cathode Resistor	12500	3000	10000	ohms
Suppressor	Connected to cathode at socket			
Cathode Cur. (no signal)	0.155	0.650	0.43	ma.
Plate Resistor	0.25	0.25	0.5	megohm
Blocking Condenser	0.01	0.03	0.03	μ f
Grid Resistor for following amplifier tube	0.25	0.25	0.25	megohm
R-F Signal (RMS) ^{oo}	1.88	1.18	1.37	volts

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

○ With shield-can connected to cathode. The internal shield within the dome of the 77 is connected to the screen within the tube.

* The d-c resistance in the grid circuit should not exceed 1.0 megohm.

▲ Voltage at plate will be Plate-Supply voltage minus voltage drop in plate resistor caused by plate current.

● With these signal values modulated 20%, the voltage output for the 100-volt plate supply is 14 peak volts at the grid of the following amplifier; likewise, for the 250-volt conditions, 17 peak volts.

Greater than 1.0 megohm. ← Indicates a change.

Sept. 2, 1941

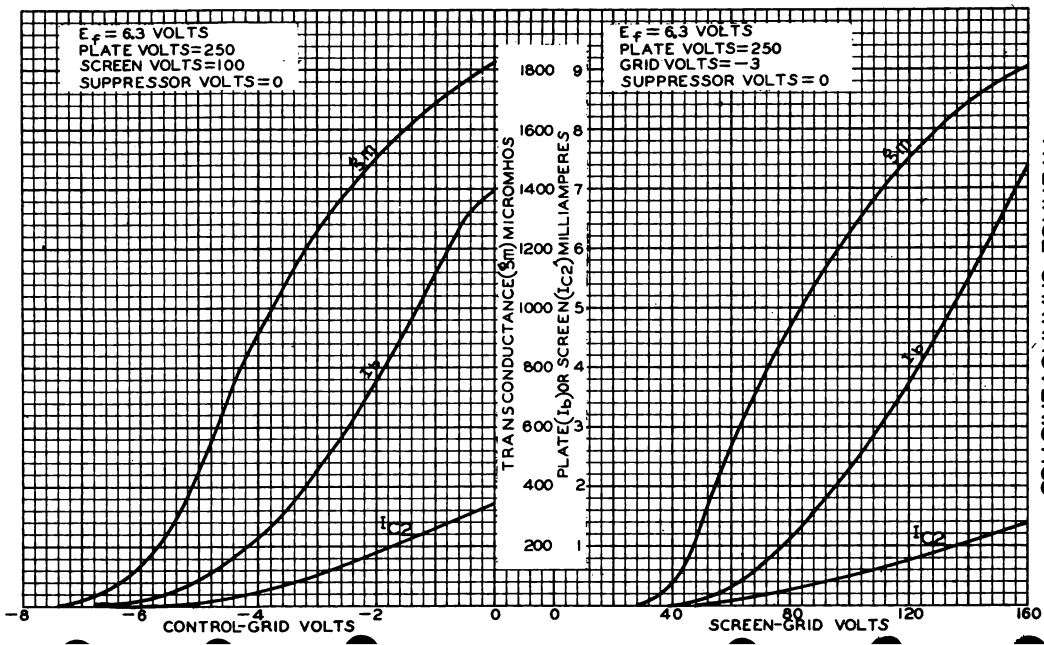
RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



77

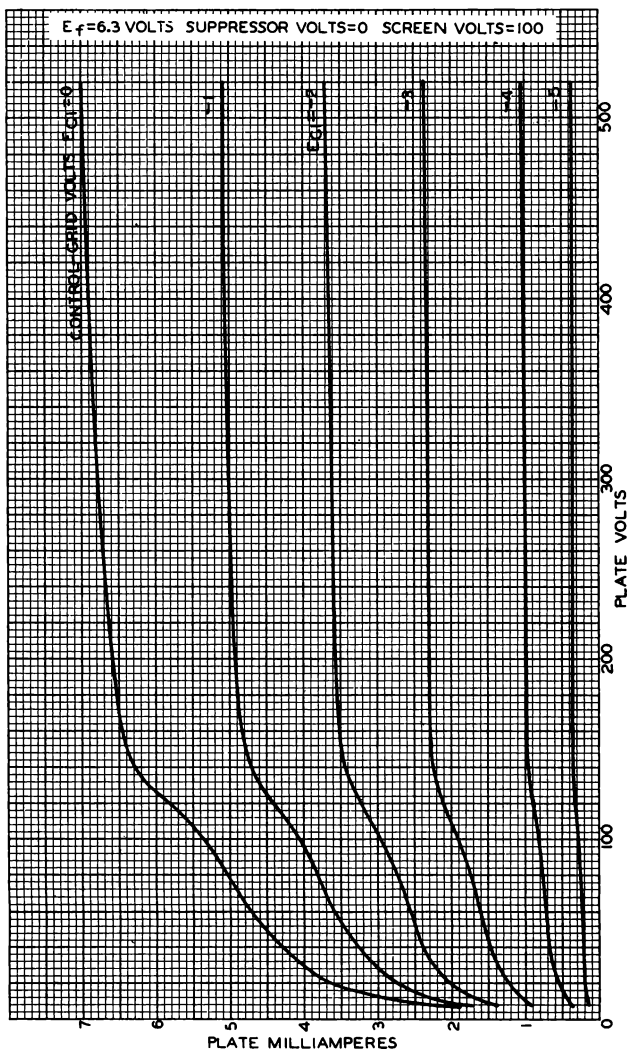
AVERAGE CHARACTERISTICS



JULY 31, 1941

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.CE-5280RI
CE-5281RI

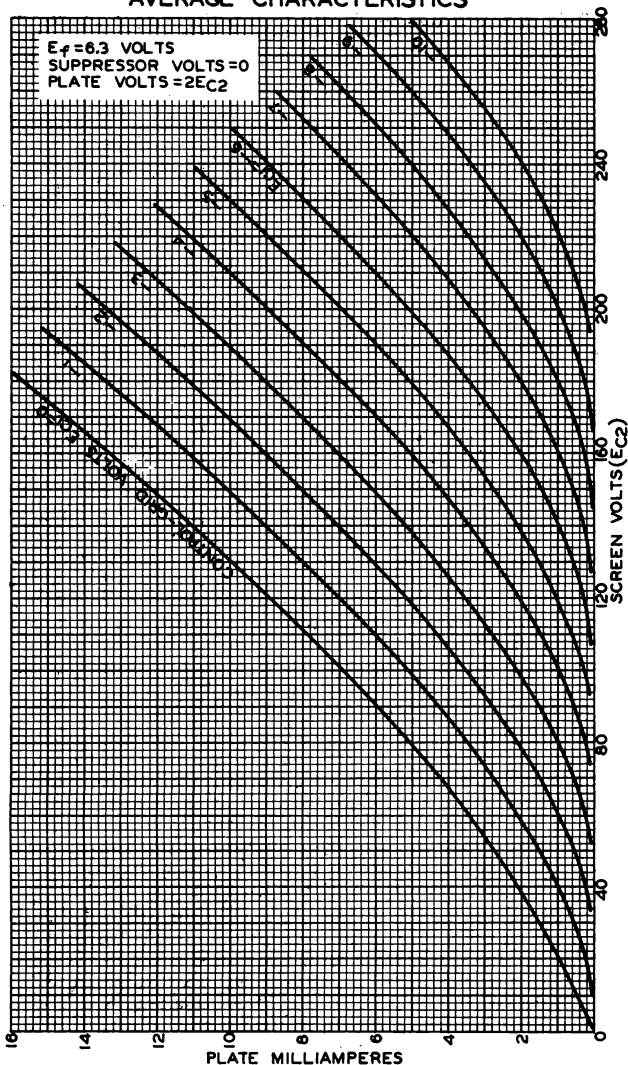
AVERAGE PLATE CHARACTERISTICS



77

Cunningham
Radiotron
 RCA-77

AVERAGE CHARACTERISTICS



JUNE 12, 1933

RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

925-5329

TRIPLE-GRID SUPER-CONTROL AMPLIFIER

For additional data and curve, see Type 6K7. Except for capacities, the characteristics of the 78 and 6K7 are identical. ←

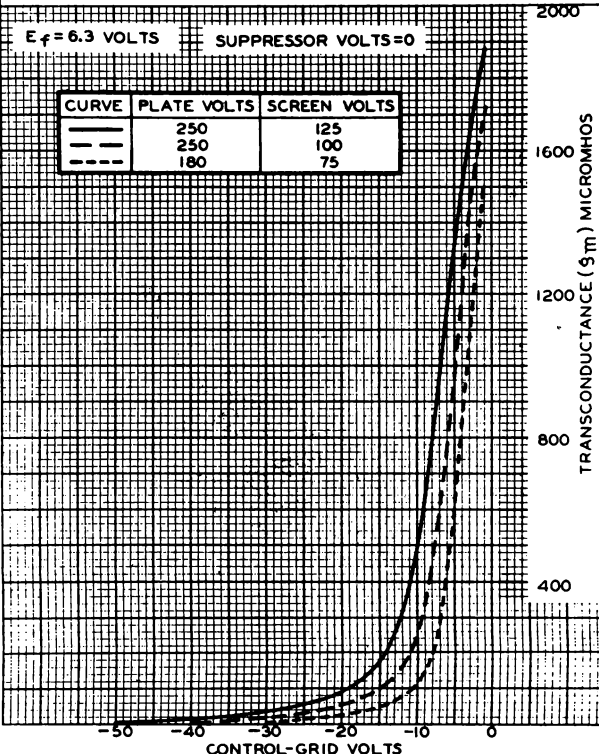
Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances: ⓪		
Grid to Plate	0.007 max.	puf
Input	4.5	puf
Output	11.0	puf
Overall Length		4-9/32" to 4-17/32"
Maximum Diameter		1-9/16"
Bulb	(3) (4)	ST-12
Cap		Small Metal
Base	(2) (5)	Small 6-Pin
Pin 1-Heater	(1) (6)	Pin 5-Cathode
Pin 2-Plate		Pin 6-Heater
Pin 3-Screen		Cap -Grid
Pin 4-Suppressor		

BOTTOM VIEW

⓪ With shield can.

← Indicates a change

AVERAGE CHARACTERISTICS



APRIL 5, 1937

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

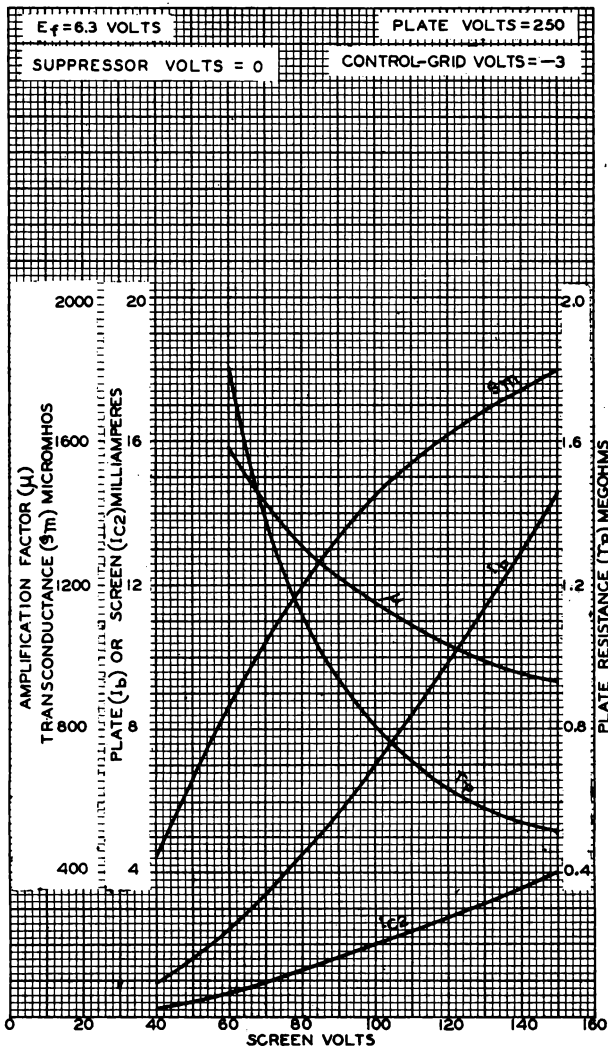
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78

RCA **Runningham** Radiotron

RCA-78

AVERAGE CHARACTERISTICS



SEPT. 11, 1933

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92S-5247RI



RCA-79

79

CLASS B TWIN AMPLIFIER

Heater	Coated Uni-potential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.6	amp.
Overall Length	4-9/32" to 4-17/32"	
Maximum Diameter	1-9/16"	
Bulb	ST-12 !	
Cap	③ ④	Small Metal
Base	Small 6-Pin	
Pin 1-Heater	② ⑤	Pin 5-Plate (Triode T_1)
Pin 2-Plate (Triode T_2)	Pin 6-Heater	
Pin 3-Grid (Triode T_2)	① ⑥	Cap -Grid (Triode T_1)
Pin 4-Cathode	BOTTOM VIEW	

For convenience, one triode unit is identified as T_1 , the other as T_2 .

CLASS "B" POWER AMPLIFIER

Plate Voltage	250 max.	volts
Peak Plate Current (per plate)	90 max.	ma.
Average Plate Dissipation	11.5 max.	watts

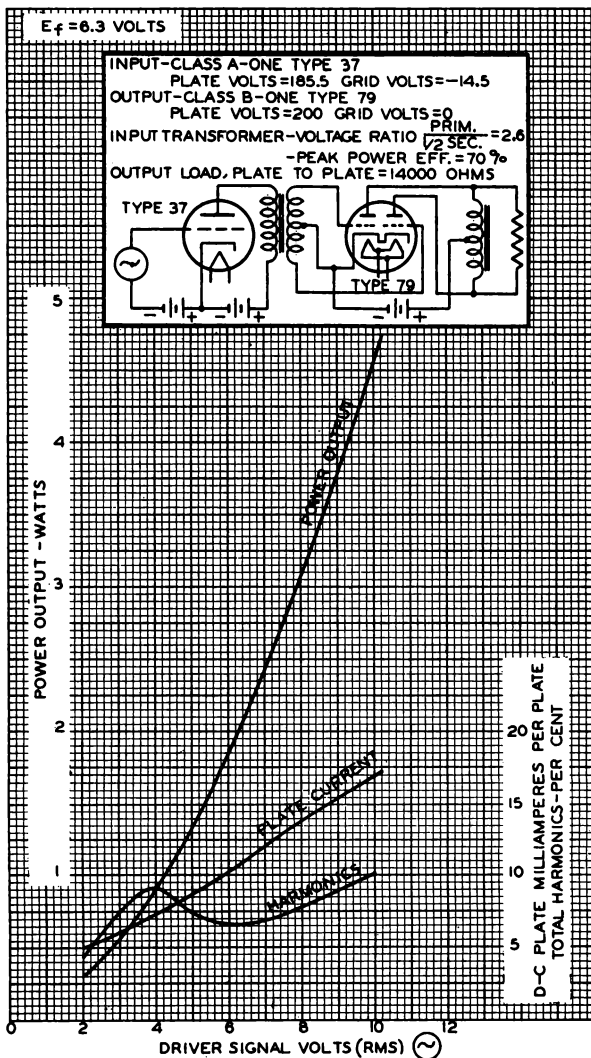
Typical Operation:

Heater	6.3	6.3	volts
Plate	180	250	volts
Grid	0	0	volts
Zero-Sig. Plate Current (per plate)	3.8	5.3	ma.
Load Res. (per plate)	1750	3500	ohms
Effective Load Res. (plate to plate)	7000	14000	ohms
Power Output ^o	5.5	8.0	approx. watts

* In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

^o With average power input of 380 milliwatts applied between grids.

OPERATION CHARACTERISTICS.





RCA Radiotron

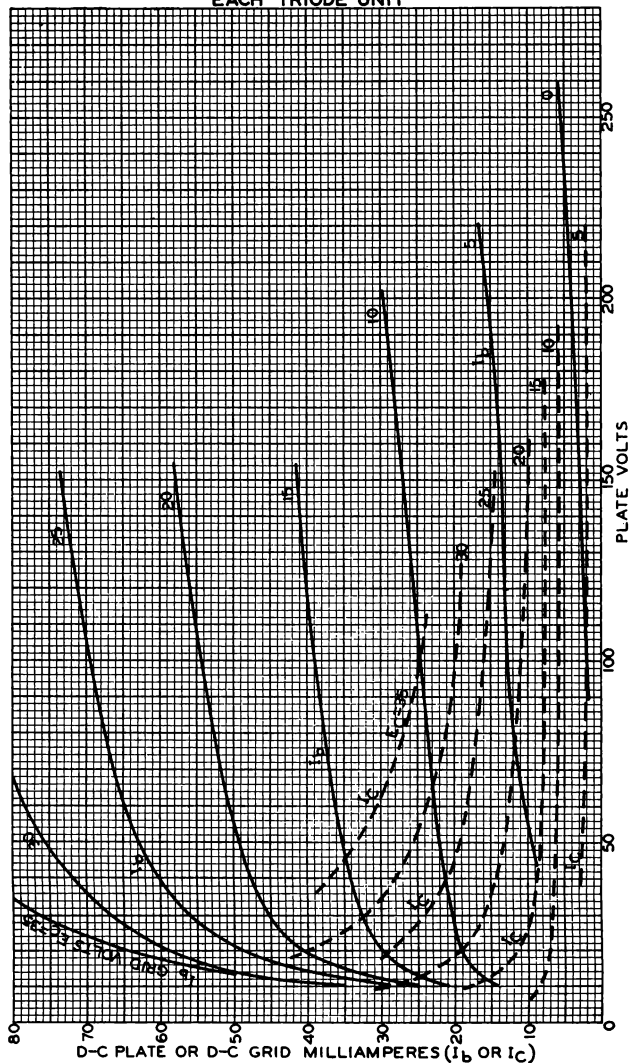
RCA-79

Cunningham
RADIO TUBES

C-79

79

AVERAGE PLATE CHARACTERISTICS
EACH TRIODE UNIT



DEC. 6, 1932

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92S-5226

79



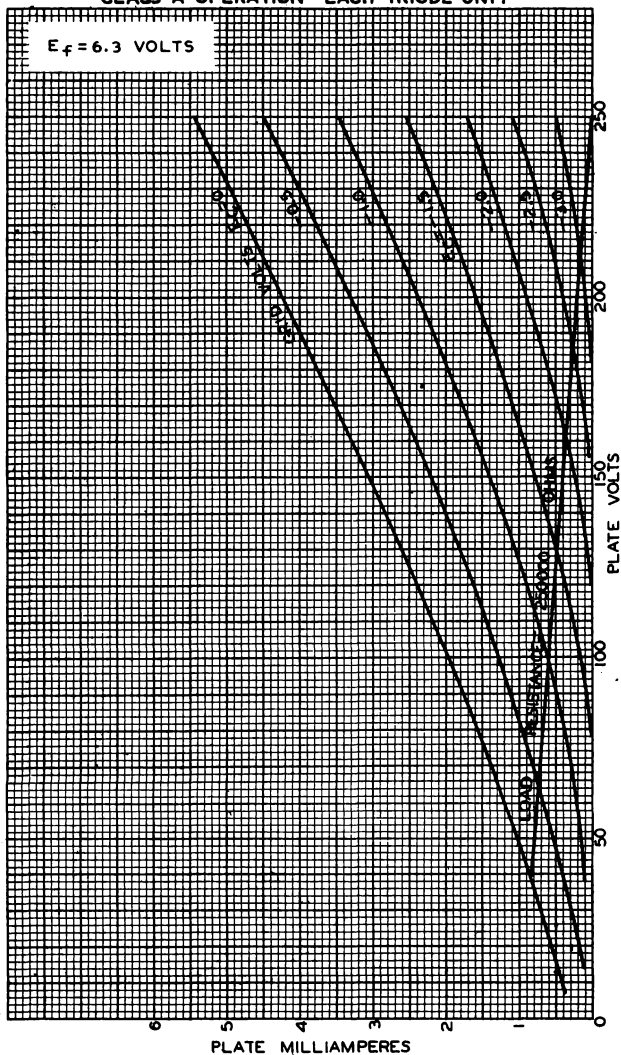
Radiotron

RCA-79

Cunningham
RADIO TUBES

C-79

AVERAGE PLATE CHARACTERISTICS CLASS A OPERATION - EACH TRIODE UNIT



NOV. 1, 1933

925-5413



80, 81
★

FULL-WAVE HIGH-VACUUM RECTIFIER

Filament	Coated	a-c volts
Voltage	5.0	amp.
Current	2.0	4-11/16"
Maximum Overall Length		1-13/16"
Maximum Diameter		ST-14
Bulb		Medium 4-Pin
Base		Pin 3 - Plate #1
Pin 1 - Filament		Pin 4 - Filament
Pin 2 - Plate #2		Vertical
Mounting Position	BOTTOM VIEW (4C)	

◇ Horizontal operation permitted if pins 1 and 4 are in horizontal plane.

Maximum Ratings, Typical Operating Conditions, and Curves are the same as those for Type 5Y3-G.

81

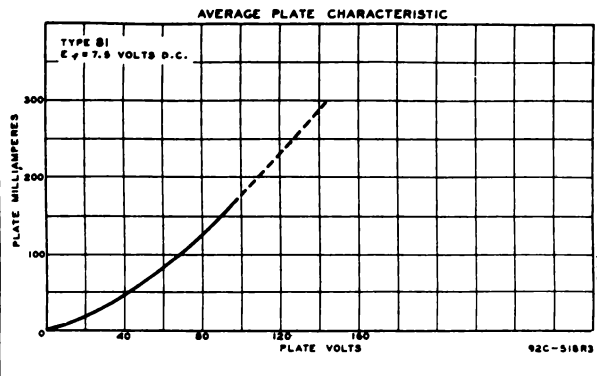
HALF-WAVE HIGH-VACUUM RECTIFIER

Filament	Coated	a-c volts
Voltage	7.5	amp.
Current	1.25	6-1/4"
Maximum Overall Length		2-7/16"
Maximum Diameter		ST-19
Bulb		Medium 4-Pin, Bay.
Base		Pin 3 - No Connection
Pin 1 - Filament		Pin 4 - Filament
Pin 2 - Plate		Vertical
Mounting Position	BOTTOM VIEW (4B)	

HALF-WAVE RECTIFIER

Peak Inverse Voltage	2000 max. volts
Peak Plate Current	500 max. ma.
Typical Operation with Condenser- or Choke-Input Filter	
A-C Plate Voltage (RMS)	700 max. volts
D-C Output Current	85 max. ma.

◇ Horizontal operation permitted if pins 1 and 4 are in vertical plane.

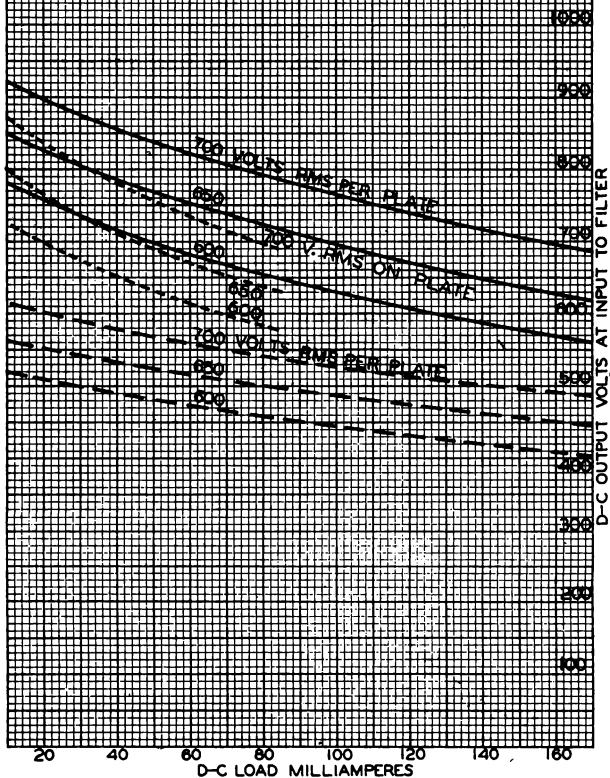
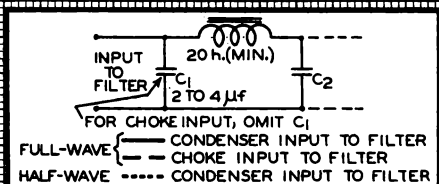


FEB. 2, 1940

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

$E_f = 7.5$ VOLTS A.C.





82

**FULL-WAVE MERCURY-VAPOR RECTIFIER**

Filament	Coated	
Voltage	2.5	a-c volts
Current	3.0	amp.
Maximum Overall Length		4-11/16"
Maximum Seated Height		4-1/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium 4-Pin
Pin 1 - Filament		Pin 3 - Plate #1
Pin 2 - Plate #2		Pin 4 - Filament
Mounting Position		Vertical, base down



BOTTOM VIEW (4C)

FULL-WAVE RECTIFIER

Peak Inverse Voltage	1550 max. volts
Peak Plate Current per Plate	600 max. ma.
Condenser Mercury Temperature Range	24° - 60°C
With Condenser-Input Filter:	
A-C Plate Voltage per Plate (RMS)	450 max. volts
Total Effective Plate-Supply Impedance per Plate [▲]	50 min. ohms
D-C Output Current	115 max. ma.
With Choke-Input Filter:	
A-C Plate Voltage per Plate (RMS)	550 max. volts
Input-Choke Inductance	6 min. henries
D-C Output Current	115 max. ma.
Tube Voltage Drop	15 approx. volts

HALF-WAVE RECTIFIER

As a half-wave rectifier, the 82 is operated with plates connected in parallel. Two 82's so connected in a full-wave circuit can supply twice the output current of a single tube. Both plates within the same tube should be connected to the same terminal of the plate transformer. To equalize the current distribution between plates, a resistor of not less than 100 ohms should be connected in series with each plate.

[▲] When a filter-input condenser larger than 40 μ f is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.

← Indicates a change.

Sept. 2, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

83
83-v

83

FULL-WAVE MERCURY VAPOR RECTIFIER

Filament	Coated	
Voltage	5.0	a-c volts
Current	3.0	amp.
Maximum Overall Length		5-3/8"
Maximum Seated Height		4-3/4"
Maximum Diameter		2-1/16"
Bulb		ST-16
Base		Medium 4-Pin
Pin 1-Filament		Pin 3-Plate #1
Pin 2-Plate #2		Pin 4-Filament
Mounting Position		Vertical, base down



BOTTOM VIEW (4C)

FULL-WAVE RECTIFIER

Peak Inverse Voltage	1550 max.	volts
Peak Plate Current per Plate	1.0 max.	amp.
Condensed Mercury Temperature Range	20° - 60°C	
<u>With Condenser-Input Filter:</u>		
A-C Plate Voltage per Plate (RMS)	450 max.	volts
Total Effective Plate-Supply Impedance per Plate ^Δ	50 min.	ohms
D-C Output Current	225 max.	ma.
<u>With Choke-Input Filter:</u>		
A-C Plate Voltage per Plate (RMS)	550 max.	volts
Input-Choke Inductance	3 min.	henries
D-C Output Current	225 max.	ma.
Tube Voltage Drop	15 approx.	volts

HALF-WAVE RECTIFIER

As a half-wave rectifier, the 83 is operated with plates connected in parallel. Two 83's so connected in a full-wave circuit can supply twice the output current of a single tube. Both plates within the same tube should be connected to the same terminal of the plate transformer. To equalize the current distribution between plates, a resistor of not less than 50 ohms should be connected in series with each plate.

^Δ When a filter-input condenser larger than 40 μf is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.

← Indicates a change.

83-v



FULL-WAVE HIGH-VACUUM RECTIFIER

Heater	Coated Unipotential Cathode*	
Voltage	5.0	a-c volts
Current	2.0	amp.
Maximum Overall Length		4-11/16"
Maximum Seated Height		4-1/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium 4-Pin
Pin 1-Heater		Pin 3-Plate #1
Pin 2-Plate #2		Pin 4-Heater & Cathode
Mounting Position		Any



BOTTOM VIEW (4AD)

For Curves and additional data, see Type 574-G.

* The cathode of the 83-v is connected to the heater within the tube.

← Indicates a change.

Sept. 2, 1941

RCA RADITRON DIVISION
RCA MANUFACTURING COMPANY, INC.

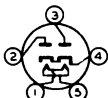
DATA



84/6Z4

**FULL-WAVE HIGH-VACUUM RECTIFIER**

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.5	amp.
Maximum Overall Length		4-3/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Base		Small 5-Pin
Pin 1 - Heater		Pin 4 - Cathode
Pin 2 - Plate		Pin 5 - Heater
Pin 3 - Plate		
Mounting Position		Any

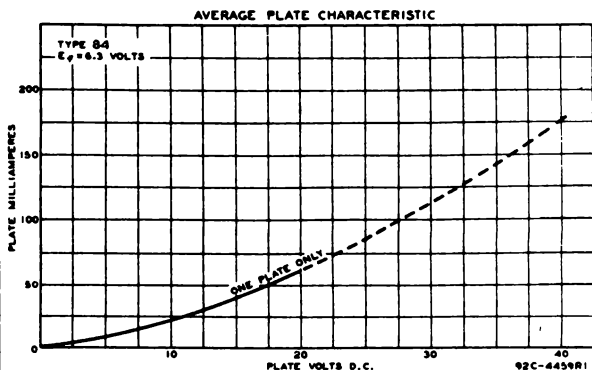


BOTTOM VIEW (5D)

FULL-WAVE RECTIFIER

Peak Inverse Voltage	1250 max. volts
Peak Plate Current per Plate	180 max. ma.
D-C Heater-Cathode Potential	450 max. volts
<i>Typical Operation with Condenser-Input Filter:</i>	
A-C Plate Voltage per Plate (RMS)	325 max. volts
Total Effective Plate-Supply Impedance per Plate [▲]	65 min. ohms
D-C Output Current	60 max. ma.
<i>Typical Operation with Choke-Input Filter:</i>	
A-C Plate Voltage per Plate (RMS)	450 max. volts
Input-Choke Inductance	10 min. henries
D-C Output Current	60 max. ma.

- The heater voltage should never fluctuate to exceed 7.5 volts.
 ▲ When a filter-input condenser larger than 40 μ f is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.



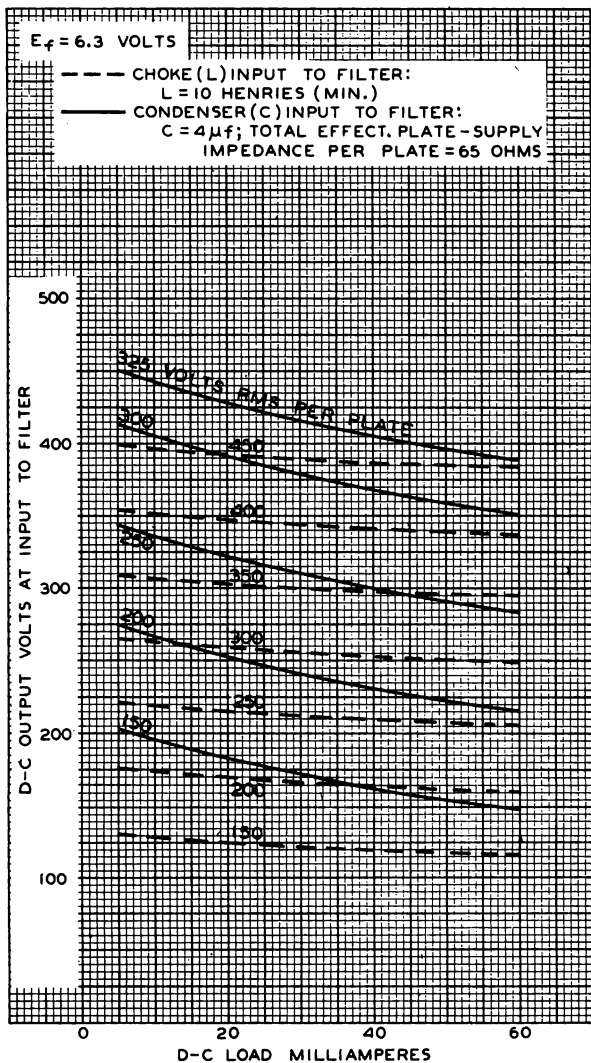
FEB. 2, 1940

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



OPERATION CHARACTERISTICS





85

85

TWIN DIODE—MEDIUM-MU TRIODEGENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage.	6.3	ac or dc volts
Current.	0.3	amp

Direct Interelectrode Capacitances — Triode Unit:*

Grid to Plate.	1.5	μmf
Grid to Cathode.	1.5	μmf
Plate to Cathode.	4.3	μmf

* With no external shield.

Mechanical:

Mounting Position. Any

Maximum Overall Length. 4-17/32"

Seated Length. 3-25/32" $\pm$ 1/8"

Maximum Diameter. 1-9/16"

Bulb. ST-12

Cap. Small

Base. Small-Shell Small 6-Pin

Basing Designation for BOTTOM VIEW. 6G

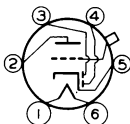
Pin 1—Heater

Pin 2—Triode

Plate

Pin 3—Diode No.2

Plate



Pin 4—Diode No.1

Plate

Pin 5—Cathode

Pin 6—Heater

Cap — Triode Grid

TRIODE UNIT
AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	250 max.	volts
------------------------	----------	-------

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode.	90 max.	volts
--	---------	-------

Heater positive with respect to cathode.	90 max.	volts
--	---------	-------

Typical Operation and Characteristics:

Plate Voltage.	135	180	250	volts
------------------------	-----	-----	-----	-------

Grid Voltage.	-10.5	-13.5	-20	volts
-----------------------	-------	-------	-----	-------

Amplification Factor.	8.3	8.3	8.3	
-------------------------------	-----	-----	-----	--

Plate Resistance.	11000	8500	7500	ohms
---------------------------	-------	------	------	------

Transconductance.	750	975	1100	μmhos
---------------------------	-----	-----	------	------------------

Plate Current.	3.7	6.0	8.0	ma
------------------------	-----	-----	-----	----

Load Resistance.	25000	20000	20000	ohms
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Power Output.	75	160	350	mw
-----------------------	----	-----	-----	----

← Indicates a change.

(continued on next page)

85



85

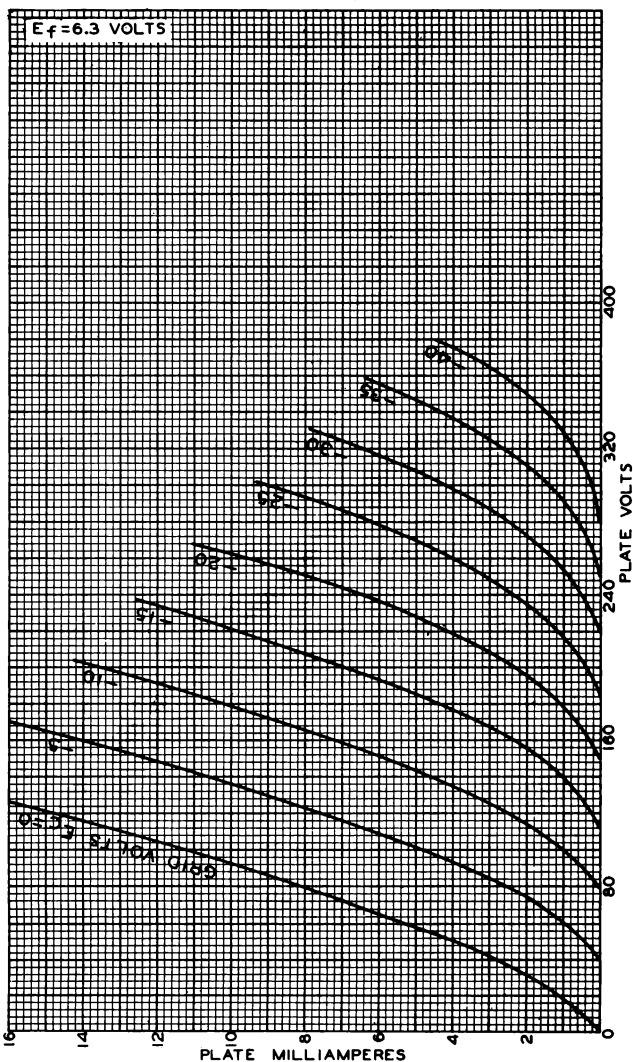
TWIN DIODE—MEDIUM-MU TRIODEDIODE UNITS - Two

Consideration of these units, including typical circuits and diode curves, is given at the front of this Section. Diode biasing of the triode unit of the 85 may be used only when at least 20000 ohms resistance is in the triode plate circuit.

*For additional data, see RESISTANCE-COUPLED AMPLIFIER
CHARTS at the front of this Section.*



85

AVERAGE PLATE CHARACTERISTICS
TRIODE UNIT

MAY 13, 1948

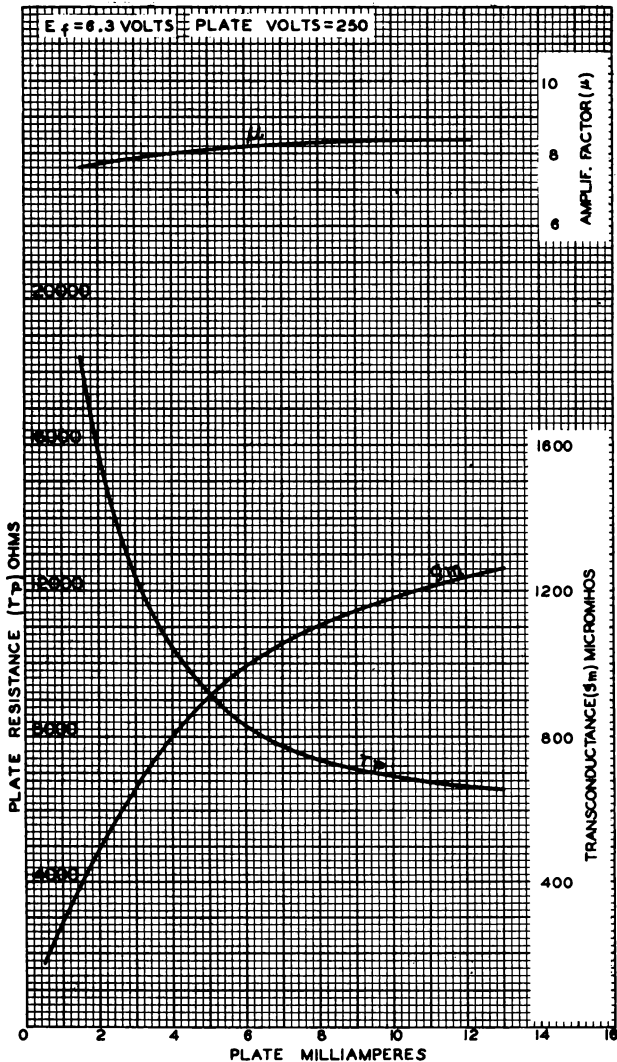
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-5107RI



85

AVERAGE CHARACTERISTICS TRIODE UNIT



MAY 14, 1948

 TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4746RI



117L7-GT/117M7-GT



117L7-GT

RECTIFIER-BEAM POWER AMPLIFIER

Heater	Coated Unipotential Cathodes	
Voltage	117	a-c or d-c volts
Current	0.09	amp.
Maximum Overall Length		3-7/16"
Maximum Seated Height		2-7/8"
Maximum Diameter		1-5/16"
Bulb		T-9
Base	Intermediate Shell Octal 8-Pin	
Pin 1-Rectifier Cathode		Pin 5-Amplifier Screen
Pin 2-Heater		Pin 6-Rectifier Plate
Pin 3-Amplifier Plate		Pin 7-Heater
Pin 4-Amplifier Grid		Pin 8-Amplifier Cathode
Mounting Position		Any

BOTTOM VIEW (8A0)

RECTIFIER UNIT (Half-Wave)

Peak Inverse Voltage	350 max.	volts
Peak Plate Current	450 max.	volts
D-C Heater to Cathode Potential	175 max.	volts
<i>With Condenser-Input Filter:</i>		
A-C Plate Voltage (RMS)	117 max.	volts
Total Effective Plate Supply		
Impedance	15 min.	ohms
D-C Output Current	75 max.	ma.

AMPLIFIER UNIT

Plate Voltage	117 max.	volts
Screen Voltage	117 max.	volts
Plate Dissipation	6.0 max.	watts
Screen Dissipation	1.0 max.	watt
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>		
Plate	105	volts
Screen	105	volts
Grid	-5.2	volts
Peak A-F Grid Voltage	5.2	volts
Zero-Sig. Plate Cur.	43	ma.
Max.-Sig. Plate Cur.	43	ma.
Zero-Sig. Screen Cur.	4	ma.
Max.-Sig. Screen Cur.	5.5	ma.
Plate Resistance	17000 approx.	ohms
Transconductance	5300	μmhos
Load Resistance	4000	ohms
Total Harmonic Distortion	5	%
Max.-Sig. Power Output	0.85	watt

It is recommended that the potential difference between heater and cathode of the amplifier unit be kept as low as possible by connecting pin #2 to the side of the line opposite that to which pins #6 & #7 are connected.

May 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

117N7-GT



117N7-GT

RECTIFIER-BEAM POWER AMPLIFIER

Heater	Coated Unipotential Cathodes	
Voltage	117	a-c or d-c volts
Current	0.09	amp.
Maximum Overall Length		3-7/16"
Maximum Seated Height		2-7/8"
Maximum Diameter		1-5/16"
Bulb		T-9
Base	Intermediate Shell Octal 8-Pin	
Pin 1-No Connection		Pin 6-Amplifier Cathode
Pin 2-Heater		Pin 7-Rectifier Plate, Heater
Pin 3-Amplifier Plate		Pin 8-Rectifier Cathode
Pin 4-Amplifier Grid		
Pin 5-Amplifier Screen		
Mounting Position	Any	

BOTTOM VIEW (8AV)

RECTIFIER UNIT (Half-Wave)

Peak Inverse Voltage	350 max.	volts
Peak Plate Current	450 max.	ma.
D-C Heater-Cathode Potential	175 max.	volts
<i>With Condenser-Input Filter:</i>		
A-C Plate Voltage (RMS)	117 max.	volts
Total Effective Plate-Supply Impedance Δ	15 min.	ohms
D-C Output Current	75 max.	ma.

AMPLIFIER UNIT

Plate Voltage	117 max.	volts
Screen Voltage	117 max.	volts
Plate Dissipation	5.5 max.	watts
Screen Dissipation	1 max.	watt
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>		
Plate Voltage	100	volts
Screen Voltage	100	volts
Grid Voltage $\square$	-6	volts
Peak A-F Grid Voltage	6	volts
Zero-Signal Plate Current	51	ma.
Zero-Signal Screen Current	5	ma.
Plate Resistance	16000 approx.	ohms
Transconductance	7000	μ mhos
Load Resistance	3000	ohms
Total Harmonic Distortion	6	%
Max.-Signal Power Output	1.2	watts

Δ When a filter-input condenser larger than 40 μ f is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.

$\square$ Type of input coupling used should not introduce too much resistance in the grid circuit. With fixed bias, the resistance should not exceed 0.25 megohm; with cathode bias, 1.0 megohm.

May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



117P7-GT



117P7-GT

RECTIFIER—BEAM POWER AMPLIFIER

Heater	Coated Unipotential Cathodes	
Voltage	117	a-c or d-c volts
Current	0.090	amp.
Maximum Overall Length		3-7/16"
Maximum Seated Height		2-7/8"
Maximum Diameter		1-5/16"
Bulb		T-9
Base	Intermediate Shell Octal 8-Pin	
Pin 1—No Connection		Pin 6—Amplifier Cathode
Pin 2—Heater		Pin 7—Rectifier Plate, Heater
Pin 3—Amplifier Plate		Pin 8—Rectifier Cathode
Pin 4—Amplifier Grid		
Pin 5—Amplifier Screen		
Mounting Position	Any	

BOTTOM VIEW (8AV)

RECTIFIER UNIT (Half-Wave)

Peak Inverse Voltage	350 max.	volts
Peak Plate Current	450 max.	ma.
D-C Heater to Cathode Potential	175 max.	volts
<i>With Condenser-Input Filter:</i>		
A-C Plate Voltage (RMS)	117 max.	volts
Total Effective Plate-Supply Impedance	15 min.	ohms
D-C Output Current	75 max.	ma.

AMPLIFIER UNIT

Plate Voltage	117 max.	volts
Screen Voltage	117 max.	volts
Plate Dissipation	6.0 max.	watts
Screen Dissipation	1.0 max.	watt
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>		
Plate Voltage	105	volts
Screen Voltage	105	volts
Grid Voltage #	-5.2	volts
Peak A-F Grid Voltage	5.2	volts
Zero-Sig. Plate Current	43	ma.
Max.-Sig. Plate Current	43	ma.
Zero-Sig. Screen Current	4	ma.
Max.-Sig. Screen Current	5.5	ma.
Plate Resistance	17000 approx.	ohms
Transconductance	5300	μmhos
Load Resistance	4000	ohms
Total Harmonic Distortion	5.0	%
Max.-Sig. Power Output	0.85	watt

The type of input coupling used should not introduce too much resistance in the grid circuit. With fixed bias, the resistance should not exceed 0.25 megohm; with cathode bias, 0.5 megohm.

Dec. 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

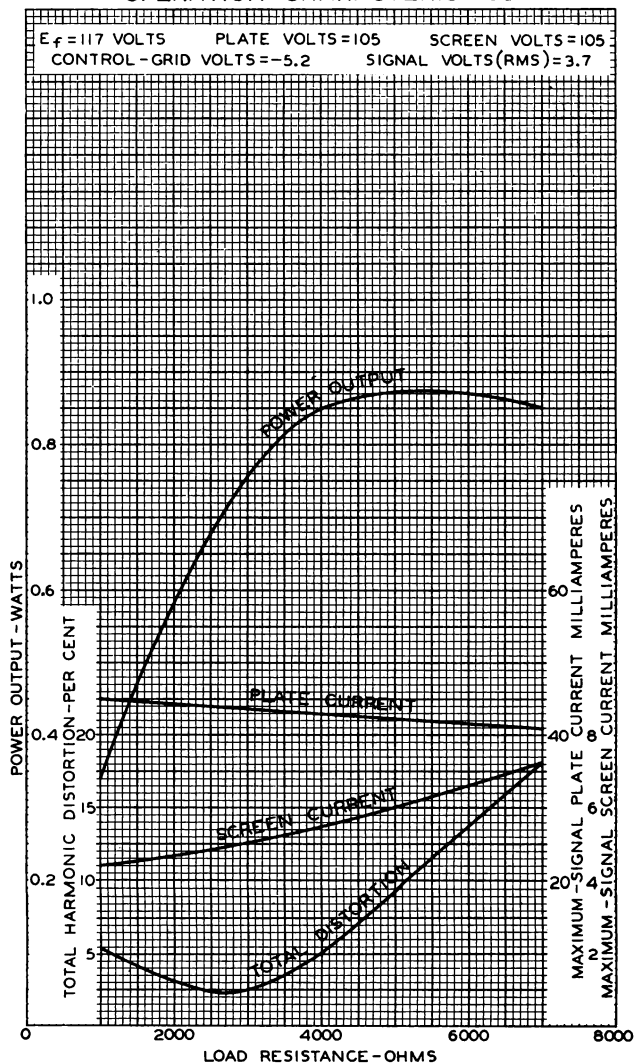
TENTATIVE DATA



117P7-GT

117P7-GT

OPERATION CHARACTERISTICS



NOV. 18, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

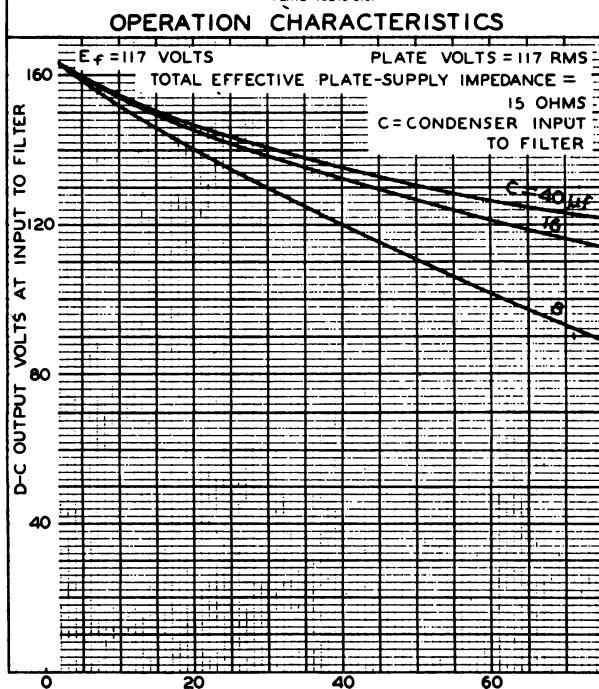
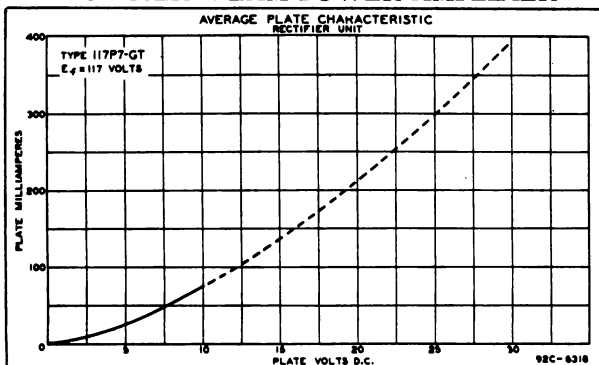
92C-6340

117P7-GT



117P7-GT

RECTIFIER-BEAM POWER AMPLIFIER



Dec. 1, 1941

D-C LOAD MILLIAMPERES
RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6318, 6319



117Z3

117Z3

HALF-WAVE VACUUM RECTIFIER

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 117 ac or dc volts

Current. 0.04 amp

Mechanical:

Mounting Position. Any

Maximum Overall Length. 2-5/8"

Maximum Seated Length. 2-3/8"

Maximum Diameter. 3/4"

Bulb T-5-1/2

Base Miniature Button 7-Pin

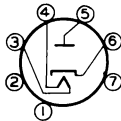
Basing Designation for BOTTOM VIEW 4CB

Pin 1 - Internal Con.-

Do Not Use

Pin 2 - No Connection

Pin 3 - Heater



Pin 4 - Heater

Pin 5 - Plate

Pin 6 - Cathode

Pin 7 - No Con.-

HALF-WAVE RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE 330 max. volts ←

PEAK PLATE CURRENT 540 max. ma

DC OUTPUT CURRENT. 90 max. ma

HOT-SWITCHING TRANSIENT PLATE CURRENT

For duration of 0.2 second maximum 2.5 max. amp

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . . 175 max. volts

Heater positive with respect to cathode. . . 100 max. volts

Typical Operation with Capacitor-Input to Filter:

AC Plate-Supply Voltage (RMS). 117 volts ←

Filter-Input Capacitor 30 μf

Min. Total Effective Plate-Supply Impedance. . . 20 ohms

DC Output Current. 90 ma

DC Output Voltage at Input to Filter (Approx.):

At half-load current (45 ma.). 130 volts

At full-load current (90 ma.). 110 volts

Voltage Regulation (Approx.):

Half-load to full-load current 20 volts

← Indicates a change.

JULY 3, 1950

TUBE DEPARTMENT

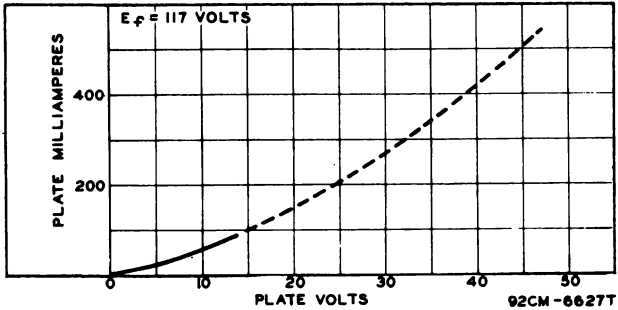
DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

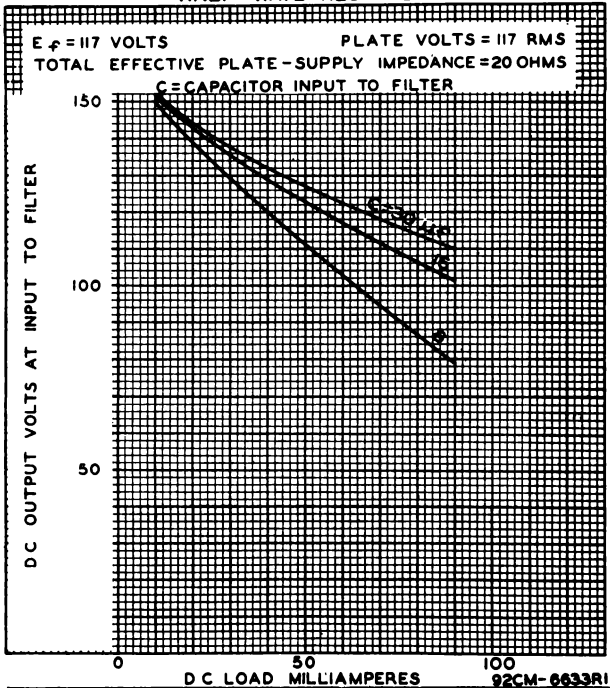
117Z3



AVERAGE PLATE CHARACTERISTIC



OPERATION CHARACTERISTICS HALF-WAVE RECTIFIER



JULY 3, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6627T-6633R1



117Z4-GT

HALF-WAVE VACUUM RECTIFIER

117Z4-GT

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 117 ac or dc volts

Current. 0.04 amp

Mechanical:

Mounting Position. Any

Maximum Overall Length. 3"

Maximum Seated Length. 2-7/16"

Maximum Diameter. 1-9/32"

Bulb T-9

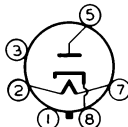
Base Intermediate-Shell Octal 6-Pin

Basing Designation for BOTTOM VIEW 5AA

Pin 1—No Connection

Pin 2—Heater

Pin 3—No Connection



Pin 5—Plate

Pin 7—Heater

Pin 8—Cathode

HALF-WAVE RECTIFIER**Maximum Ratings, Design-Center Values:**

PEAK INVERSE PLATE VOLTAGE 350 max. volts

PEAK PLATE CURRENT 540 max. ma

DC OUTPUT CURRENT. 90 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 175 max. volts

Heater positive with respect to cathode 175 max. volts

Typical Operation with Capacitor-Input to Filter:

AC Plate-Supply Voltage (RMS). 117 volts

Filter-Input Capacitor 40 μ f

Min. Total Effective Plate-Supply Impedance* 30 ohms

DC Output Current. 90 ma

* When a filter-input capacitor larger than 40 μ f is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.

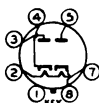


117Z6-GT/G

117Z6-GT/G

HIGH-VACUUM RECTIFIER-DOUBLER

Heater	Coated Unipotential Cathodes	
Voltage	117	a-c or d-c volts
Current	0.075	amp.
Maximum Overall Length		3-5/16"
Maximum Seated Height		2-3/4"
Maximum Diameter		1-5/16"
Bulb		T-9
Base	Intermediate Shell Octal 7-Pin	
Pin 1 - No Connection		Pin 5 - Plate #1
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate #2		Pin 8 - Cathode #1
Pin 4 - Cathode #2		
Mounting Position		Any



BOTTOM VIEW (G-7Q)

Maximum Ratings Are Design-Center Values

RECTIFIER OR DOUBLER

Peak Inverse Plate Voltage	700 max. volts
Peak Plate Current per Plate	360 max. ma.
D-C Output Current per Plate	60 max. ma.
D-C Heater-Cathode Potential	350 max. volts

Typical Operation As Half-Wave Rectifier
with Condenser-Input Filter:^o

A-C Plate Supply Voltage				
per Plate (RMS)	117	150	235	volts
Filter Input Condenser	40	40	40	μf
Min. Total Effect. Plate-Supply Imped. per Plate	15	40	100	ohms
D-C Output Current per Plate	60	60	60	ma.

Typical Operation As Voltage Doubler:

	Half-Wave	Full-Wave	
A-C Plate Supply Voltage			
per Plate (RMS)	117	117	volts
Filter Input Condenser	40	40	μf
Min. Total Effect. Plate-Supply Imped. per Plate	30	15	ohms
D-C Output Current	60	60	ma.

^o In half-wave rectifier service, the two units may be used separately or in parallel.

For Typical Rectifier-Doubler Circuits, see Type 25Z5.

← Indicates a change.

AUG. 2, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

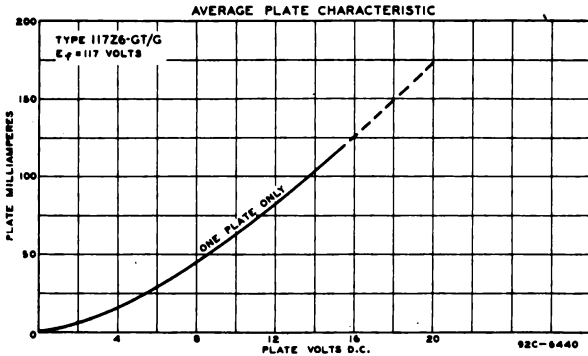
DATA

117Z6-GT/G



117Z6-GT/G

HIGH-VACUUM RECTIFIER-DOUBLER



AUG. 2, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6440



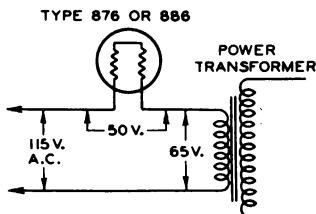
RCA-876, RCA-886

CURRENT REGULATOR (BALLAST TUBE)

8876
8866

Filament	Iron	
	Type 876	Type 886
Maximum Overall Length	8"	8"
Maximum Diameter	2-1/16"	2- 1/16"
Bulb	T-16	T-16
Base	Mogul Screw	Mogul Screw
Operating Conditions:		
Voltage Range	40 to 60	40 to 60 volts
Operating Current	1.7	2.05 amp.
Ambient Temperature	150	150 °F

TYPICAL CIRCUIT CONNECTION FOR TYPE 876 OR 886



NOTE: THESE TUBES OPERATE AT A HIGH BULB TEMPERATURE AND MUST BE SURROUNDED BY A METAL VENTILATING STACK

The 876 and 886 are, within their range of operation, constant current regulating devices. Either type may be used in series with the primary of a suitably designed transformer (or in series with a resistive load) to maintain essentially constant input voltage to the primary (or load) over a range of 20 volts variation in line voltage. In other words, these tubes absorb line-voltage variation and maintain the wattage input to the primary of the transformer under load essentially constant. Therefore, the voltage output from the secondary is also essentially constant.

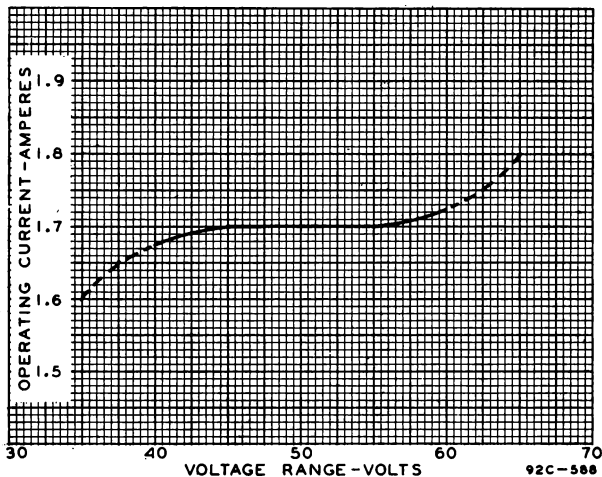
The primary of the transformer should be designed for a voltage input equal to the average line voltage minus 50 volts. The diagram above shows values for a line voltage of 115 volts a.c.

The primary current of the transformer under load should be 1.7 amperes for Type 876 and 2.05 amperes for Type 886. If less than this specified current is drawn, adjustment to the rated value for average line voltage must be made either by means of a shunt resistor across the primary or by an increase in the load on the secondary. If more than the specified current is drawn, two or more of these tubes connected in parallel will be required.

876
886

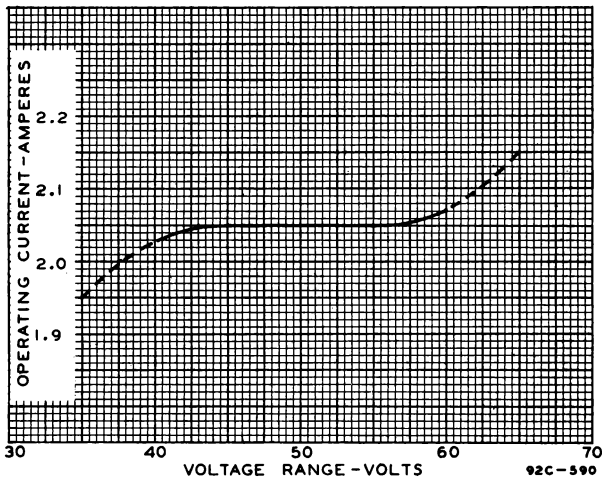
Cunningham
Radiotron
RCA-876

REGULATION CHARACTERISTIC



RCA-886

REGULATION CHARACTERISTIC



AUG. 26, 1936

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4668



7025

7025

HIGH-MU TWIN TRIODE

9-PIN MINIATURE TYPE

For high-fidelity audio-amplifier applications critical as to noise and hum. In other respects, the 7025 is similar to the 12AX7.

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage.	12.6	6.3	ac or dc volts
Current.	0.15	0.3	 amp

Direct Interelectrode Capacitances (Approx.):^o

	Unit No. 1	Unit No. 2	
Grid to plate. . .	1.7	1.7	 $\mu\mu\text{f}$
Grid to cathode and heater . . .	1.6	1.6	 $\mu\mu\text{f}$
Plate to cathode and heater . . .	0.46	0.34	 $\mu\mu\text{f}$

Equivalent-Noise and Hum Voltage (Referenced to Grid):

Values are for Each Unit

Average Value (RMS). 1.8 microvolts
Measured in "true rms" units under the following conditions:
heater volts = 6.3 ac (parallel connection), center-tap of
heater transformer connected to ground, dc plate-supply volts
= 250, plate load resistor (megohms) = 0.1, cathode resistor
(ohms) = 2700, cathode-bypass capacitor (μf) = 100, grid
resistor (ohms) = 0, and amplifier covering frequency range
between 25 and 10,000 cps.

Maximum Value (RMS). 7 microvolts
Measured in "true rms" units under the same conditions as
for "Average Value" except that the cathode resistor is
unbypassed, and grid resistor (megohms) = 0.05.

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage.	100	250	volts
Grid Voltage	-1	-2	volts
Amplification Factor	100	100	
Plate Resistance (Approx.)	80000	62500	ohms
Transconductance	1250	1600	μmhos
Plate Current	0.5	1.2	ma

Mechanical:

Operating Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length.	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip)	1-9/16" $\pm$ 3/32"
Diameter	0.750" to 0.875"
Dimensional Outline.	See General Section
Bulb	T6-1/2

^o: See next page.

7025



7025

HIGH-MU TWIN TRIODE

Base Small-Button Noval 9-Pin (JEDEC No.E9-1)
 Basing Designation for BOTTOM VIEW 9A

Pin 1—Plate of
 Unit No.2

Pin 2—Grid of
 Unit No.2

Pin 3—Cathode of
 Unit No.2

Pins 4 & 9—Heater of
 Unit No.2

Pins 5 & 9—Heater of
 Unit No.1



Pin 6—Plate of
 Unit No.1

Pin 7—Grid of
 Unit No.1

Pin 8—Cathode of
 Unit No.1

Pin 9—Heater
 Mid-Tap

AMPLIFIER — Class A₁

Values are for Each Unit

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE. 330 max. volts

GRID VOLTAGE:

Negative-bias value. 55 max. volts

Positive-bias value. 0 max. volts

PLATE DISSIPATION. 1.2 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 200 max. volts

Heater positive with respect to cathode. 200[▲] max. volts

Typical Operation as Resistance-Coupled Amplifier (Each Unit):

See RESISTANCE-COUPLED AMPLIFIER CHART No. 25
 at front of Receiving Tube Section

[○] Without external shield.

[▲] The dc component must not exceed 100 volts.

OPERATING CONSIDERATIONS

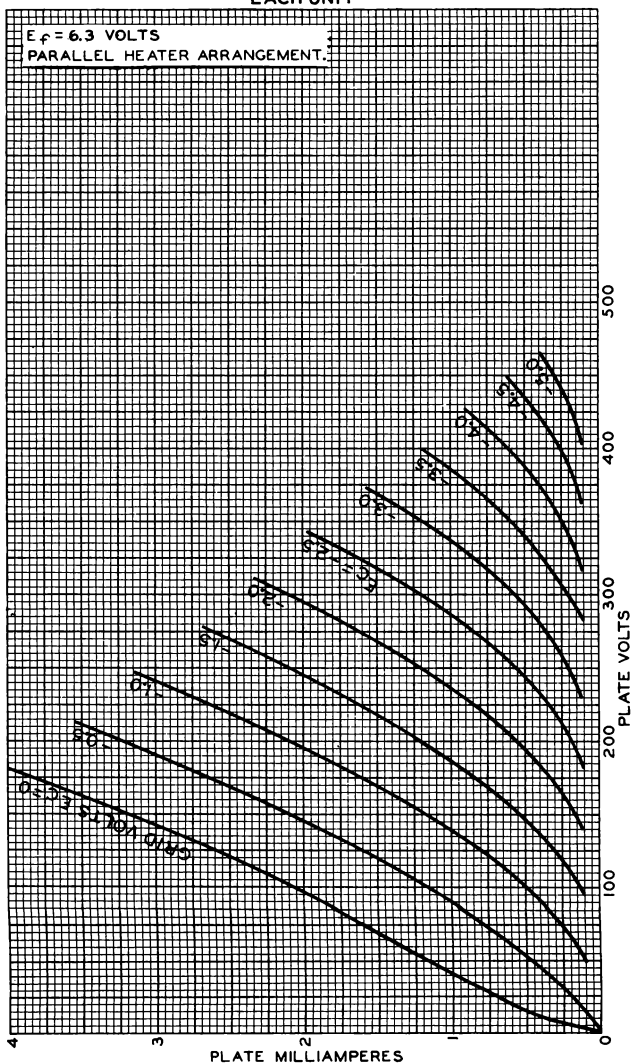
Parallel heater arrangement is recommended for use in high-gain, resistance-coupled-amplifier applications such as in the preamplifier stages of phonographs, microphones, and tape recorders. With closely paired, electrostatically shielded heater leads, a hum-balance control is unnecessary when the center-tap of the heater transformer is connected to ground. In applications where the heater-transformer winding does not have a center-tap, a 100-ohm hum-balancing potentiometer should be connected across the heater leads with the slider connected to ground.



7025

AVERAGE PLATE CHARACTERISTICS EACH UNIT

7025

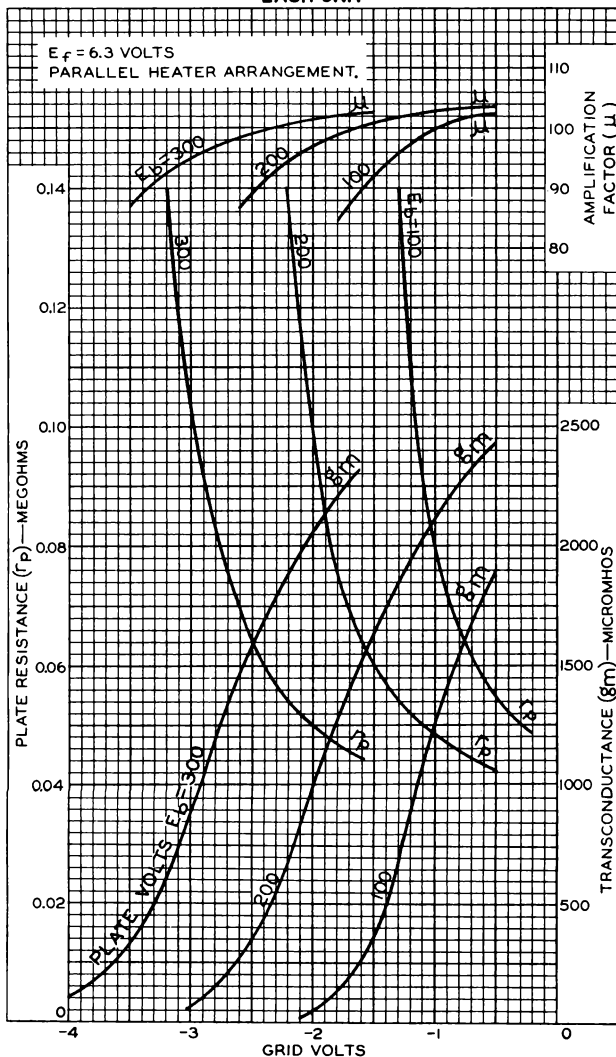


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AVERAGE CHARACTERISTICS EACH UNIT



ELECTRON TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6880



7199

7199

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

For high-fidelity audio-amplifier applications critical as to noise and hum

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage. 6.3 $\pm$ 10% . . . ac or dc volts

Current. 0.45 amp

Direct Interelectrode Capacitances:^o

Triode Unit:

Grid to plate. 2 μ f

Grid to cathode and heater 2.3 μ f

Plate to cathode and heater. 0.3 μ f

Pentode Unit:

Grid No.1 to plate 0.06 max. μ f

Grid No.1 to cathode & internal shield & grid No.3, grid No.2, and heater 5 μ f

Plate to cathode & internal shield & grid No.3, grid No.2, and heater 2 μ f

Equivalent-Hum and Noise Voltage (Referenced to Grid):

Triode Unit

Median Value (RMS) 10 microvolts

Maximum Value (RMS). 150 microvolts

Measured in "true rms" units under the following conditions: heater volts = 6.3 ac, center-tap of heater transformer connected to ground, plate-supply volts = 250, plate load resistor (megohms) = 0.1, cathode resistor (ohms) = 1500, grid resistor (megohms) = 0.05, and amplifier covering frequency range between 25 and 10,000 cps.

Pentode Unit

Median Value (RMS) 35 microvolts

Maximum Value (RMS). 100 microvolts

Measured in "true rms" units under the following conditions: heater volts = 6.3 ac, center-tap of heater transformer connected to ground, plate-supply volts = 250, plate-load resistor (megohms) = 0.1, grid-No.2 supply volts = 250, grid-No.2 resistor (megohms) = 0.33, grid-No.2-bypass capacitor (μ f) = 0.22, cathode resistor (ohms) = 1200, grid-No.1 resistor (megohms) = 0.05, and amplifier covering frequency range between 25 and 10,000 cps.

Characteristics, Class A₁ Amplifier:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Plate-Supply Voltage	215	100 220	volts

^o: See next page.



MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

	Triode Unit	Pentode Unit	
Grid-No.2 Supply voltage . . .	—	50 130	volts
Grid-No.1 Voltage.	—8.5	— —	volts
Cathode Resistor	—	1000 62	ohms
Amplification Factor	17	— —	
Plate Resistance (Approx.) . .	0.0081	1 0.4	megohm
Transconductance	2100	1500 7000	μ mhos
Plate Current.	9	1.1 12.5	ma
Grid-No.2 Current.	—	0.35 3.5	ma
Grid-No.1 Voltage (Approx.) for plate $\mu a = 10$	—40	—4 —	volts

Mechanical:

Operating Position	.Any
Maximum Overall Length	2-3/16"
Maximum Seated Length.	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip).	1-9/16" $\pm$ 3/32"
Diameter	0.750" to 0.875"
Dimensional Outline.	See General Section
Bulb	T6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No.E9-1)
Basing Designation for BOTTOM VIEW	.9JT

Pin 1—Triode
Plate
Pin 2—Pentode
Plate
Pin 3—Pentode
Grid No.2
Pin 4—Heater
Pin 5—Heater



Pin 6—Pentode
Cathode,
Grid No.3,
Internal
Shield
Pin 7—Pentode
Grid No.1
Pin 8—Triode
Cathode
Pin 9—Triode
Grid

AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

	Triode Unit	Pentode Unit	
PLATE VOLTAGE.	330 max.	330 max.	volts
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE	—	330 max.	volts
GRID-No.2 VOLTAGE.	—	See Grid-No.2 Input	
<i>Rating Chart at front of Receiving Tube Section</i>			
GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Positive-bias value. . .	0 max.	0 max.	volts

0: See next page.



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MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

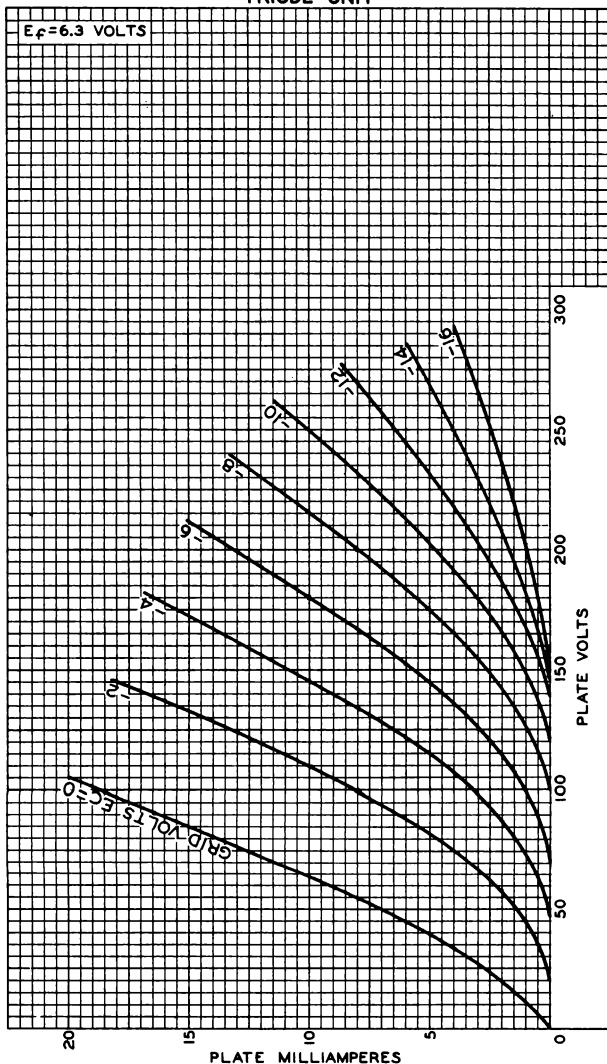
	Triode Unit	Pentode Unit	
GRID-No.2 INPUT:			
For grid-No.2 voltages up to 165 volts. . . .	—	0.6 max.	watt
For grid-No.2 voltages between 165 and 330 volts.	—	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section	
PLATE DISSIPATION.	2.4 max.	3 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode . .	200 max.	200 max.	volts
Heater positive with respect to cathode . .	200 [▲] max.	200 [▲] max.	volts
Maximum Circuit Values:			
	Triode Unit	Pentode Unit	
Grid-No.1-Circuit Resistance:*			
For fixed-bias operation.	0.5 max.	0.25 max.	megohm
For cathode-bias operation.	1 max.	1 max.	megohm
[○] Without external shield. [▲] The dc component must not exceed 100 volts. [*] If either unit is operated at maximum rated conditions, grid-No.1- circuit resistances for both units should not exceed the stated values.			
DEFINITIONS			
Median. That value in a series such that half of the tubes in the series are on one side of it, and half on the other.			

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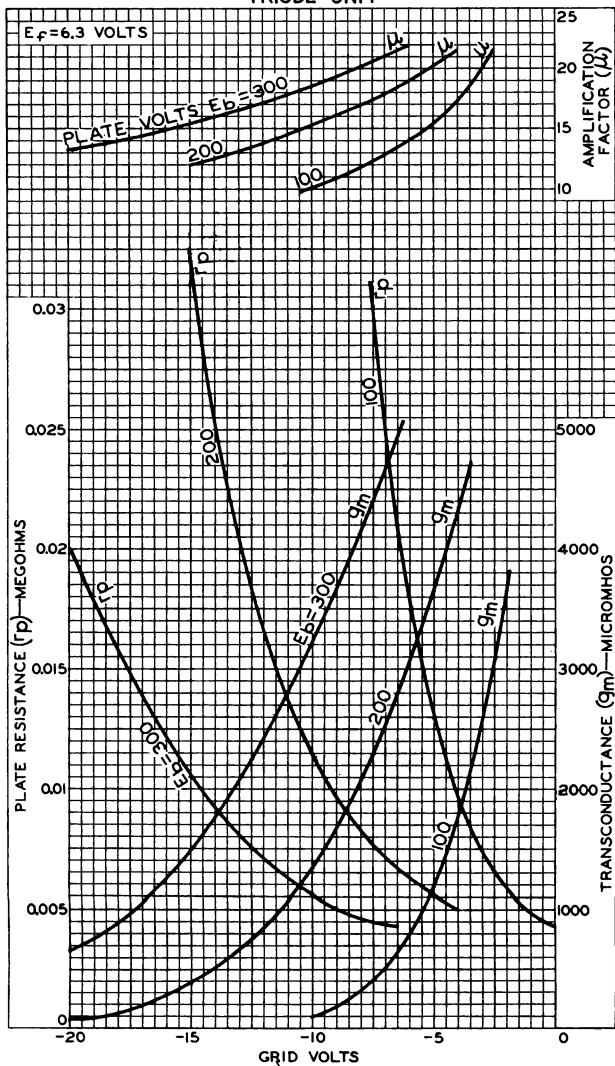
AVERAGE PLATE CHARACTERISTICS TRIODE UNIT





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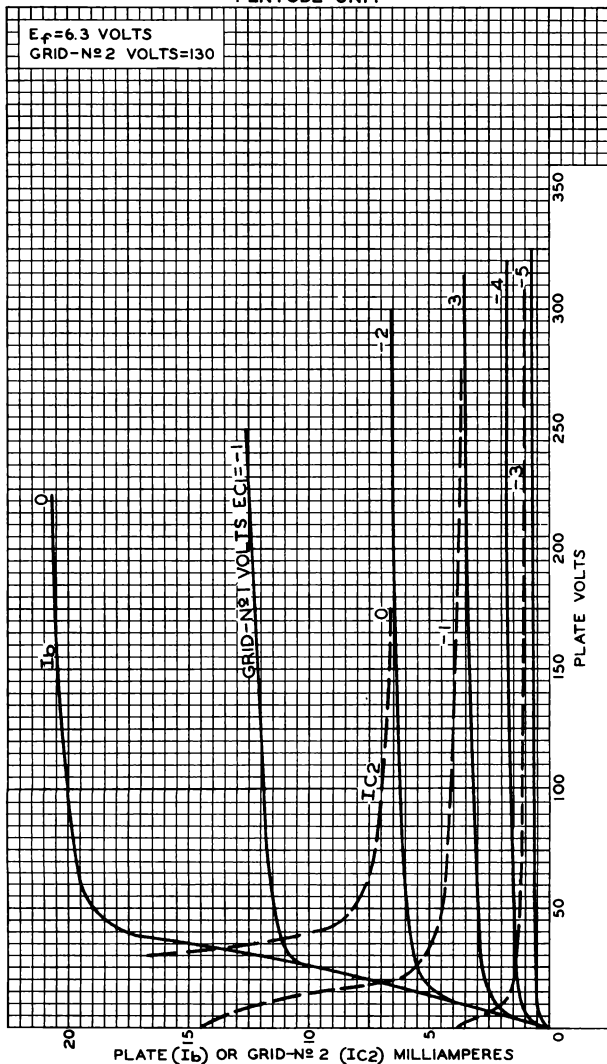
AVERAGE CHARACTERISTICS
TRIODE UNIT

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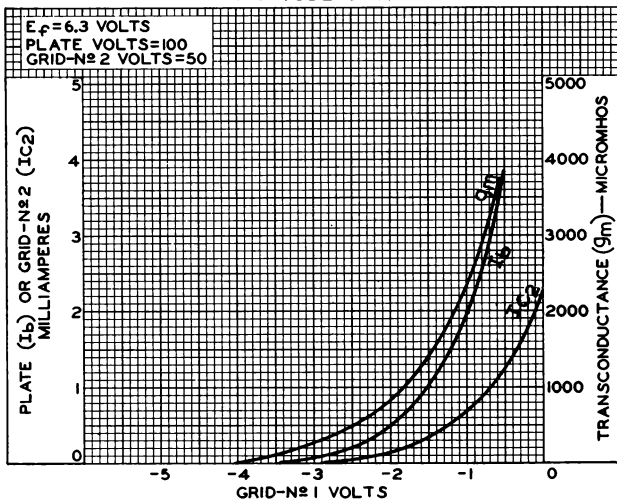
AVERAGE CHARACTERISTICS PENTODE UNIT



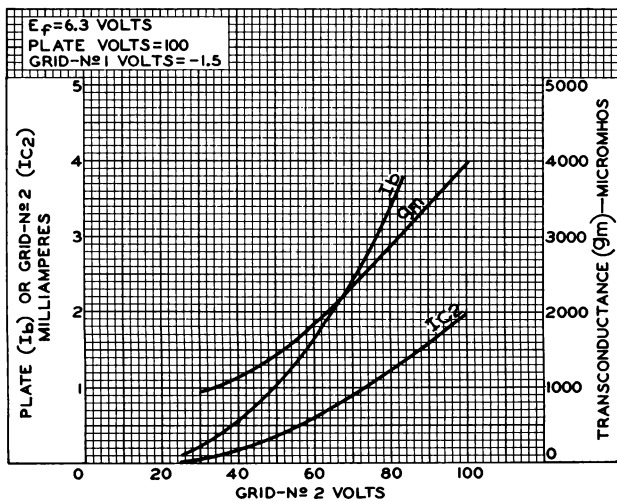


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AVERAGE CHARACTERISTICS
PENTODE UNIT

92CS-9702

ELECTRON TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CS-9703

**RCA TUBE
HANDBOOK
HB-3****SEMICONDUCTOR
DEVICE
SECTION**

In this section data are given for semiconductor devices such as crystal diodes and transistors. These electron devices depend for their functioning on the flow of electrons in a solid—a semiconductor.

*For further Technical Information, write to
Commercial Engineering, Tube Department,
Radio Corporation of America, Harrison, N. J.*



TRANSISTORS

Transistors are a new form of electron device. They can perform many of the functions of an electron tube and, in addition, can do some things better and more efficiently than electron tubes. Unlike electron tubes which depend for their functioning on the flow of electrons through a vacuum, a gas, or a vapor, transistors make use of the flow of electrons in a solid — a semiconductor.

A semiconductor is a material having a conductivity lower than that of metals but higher than that of insulators. There are many varieties of semiconductors, but the one employed for the transistors described in this section is germanium. Germanium in its very purest state behaves like an insulator, but its conductivity can be increased by the addition of exact but almost infinitesimal amounts of certain impurities. Peculiarly, the manner in which a germanium crystal conducts can be changed by the choice of the impurity. Thus, by the addition of the proper amount of certain impurities to pure germanium, its conductivity is increased because a surplus of electrons which can migrate freely through the crystal is provided. A conducting germanium crystal so made is identified as *n*-type because it depends on negative particles of electricity, electrons, for conduction.

On the other hand, the addition of other impurities provides a deficiency of electrons which effectively behave like positive particles of electricity. This deficiency of electrons leaves vacancies or holes in the crystal structure. These holes which are free to migrate can carry current but in a direction opposite to that of the *n*-type crystal. Because these carriers of the conduction current are positive in nature, a germanium crystal of this type is identified as *p*-type.

It should be noted that whereas electron tubes depend ordinarily on electrons for conduction, transistors not only make use of electrons but also of holes for obtaining conduction.

The transistors described in this section make use of both kinds of conduction and employ two different types of structures. These two types of structures are identified as "point-contact" and "junction".

Fig.1 shows the structure of a point-contact transistor. It consists of a crystal of *n*-type germanium having three electrical contacts. Two of these are point contacts and are known as the emitter and collector. A third, the



TRANSISTORS

base, makes area contact with the germanium crystal. The complete assembly is encased in plastic to provide ruggedness and freedom from atmospheric contaminants.

Fig. 1 also shows the point-contact transistor connected in a simple circuit in which the base connection serves as the common return for the input circuit and the output circuit. The input circuit on the left is completed through the battery, the emitter, and the germanium crystal to the base connection. When a positive voltage is applied to the emitter, electrons will be drawn from the crystal into the emitter and thus leave holes in the crystal structure. Under the influence of the negative field of the collector, these holes flow to the collector and thereby increase the collector current appreciably. Or as is sometimes stated, the emitter electrode injects holes into the germanium crystal. Holes near the collector allow electrons to pass into the crystal. Some of these electrons neutralize the holes; others flow to the base connection and thus complete the circuit.

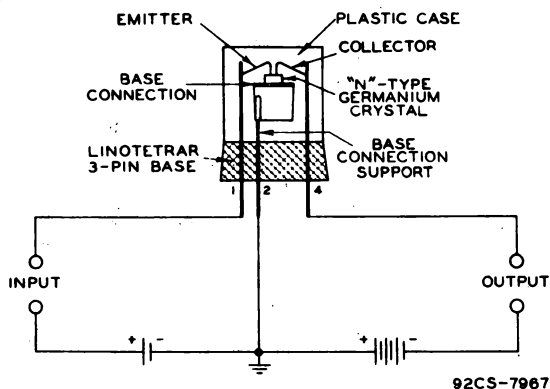


Fig. 1 - Diagrammatic Sketch Showing Structural Arrangement of Type 2N32 or Type 2N33 with Associated Simple Circuit.

If the assumption is made that every unit of hole current which leaves the emitter reaches the collector, it follows that a small change in emitter current will result in an equivalent change in collector current, and consequently produce a current amplification factor of one. The current

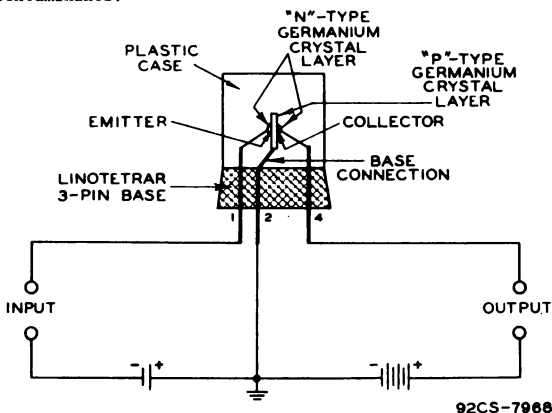


TRANSISTORS

amplification factor or "alpha" of a transistor is defined as the ratio of change in collector current to a change in emitter current when collector voltage is maintained constant. In point-contact transistors "alpha" is greater than unity; in junction-type transistors, it is less than but approaches unity.

If the germanium crystal employed in Fig.1 is of the p-type, a negative voltage is applied to the emitter and holes will be drawn from the crystal into the emitter and thus leave an excess of electrons in the crystal structure. Under the influence of the positive field of the collector, these electrons flow through the crystal to the collector. In general, the p-type germanium crystal has characteristics similar to the n-type except that in operation all battery polarities are reversed.

Fig.2 shows the structure of a junction transistor of the n-p-n type. It is composed of a wafer of p-type germanium between two smaller layers of n-type germanium. Low-resistance connections are made to the n-layers, one of which serves as the emitter and the other as the collector. A third low-resistance connection to the p-layer is the base connection. The complete assembly is encased in plastic to provide ruggedness and freedom from atmospheric contaminants.



92CS-7968

Fig.2 - Diagrammatic Sketch Showing Structural Arrangement of Type 2N35 with Associated Simple Circuit. For Illustration Purposes, the Crystal Assembly is Rotated 90° Within the Plastic Case.



TRANSISTORS

The principle of operation of the junction transistor is somewhat different from that of the point-contact transistor. In the $n-p-n$ junction transistor, electrons from the n -layer diffuse through the p -layer and are attracted to the collector. The p -layer has a surplus of holes. Because the p -layer is very thin, most of the electrons entering the base region from the emitter will reach the collector region without recombining (neutralizing) the holes. Practically all of the electrons leaving the emitter reach the collector, thus resulting in a current amplification factor approaching unity.

The action of the $p-n-p$ type of junction transistor is similar to that of the $n-p-n$ type except that the polarities of the battery voltages are reversed and conduction is caused by holes instead of electrons.

Transistors are essentially low-impedance devices, that is, they deal with current changes rather than voltage changes. They are small in size and the power requirements for their operation are extremely small. In addition, they operate instantaneously on application of voltages to the electrodes.

The point-contact transistor has a current amplification factor greater than unity. This feature contributes to its usefulness in oscillator and triggering applications. In addition, the point-contact transistor can be operated at relatively high frequencies. Because of this feature, it has considerable application in switching circuits and in radio circuits such as intermediate-frequency amplifiers, radio-frequency amplifiers, and radio-frequency oscillators.

The junction transistor has a current amplification factor approaching unity. This characteristic contributes to the stability of the junction transistor even under short-circuit conditions. It has a high operating power gain and can operate with extremely low values of input power — features which are of primary importance in oscillator and amplifier applications in the audio-frequency and low-frequency ranges.



TENTATIVE DEFINITIONS of Semiconductor-Device Terms

Small-Signal Current Gain (Current Transfer Ratio). The quotient of the change of output current with ac output circuit shorted divided by the change in input current producing the change in output current. The current components are understood to be small enough so that linear relations hold between them.

Large-Signal DC Current Gain. The quotient of the dc output current with the dc output circuit shorted divided by the dc input current producing the dc output current.

Circuit-Stability Factor. The quotient of the change of dc collector current divided by the change in collector saturation current producing the change in dc collector current.

Collector Saturation Current. The temperature-sensitive dc collector current that flows when a dc collector-to-base voltage greater than -0.2 volt is applied with emitter circuit open.

Class A Amplifier. An amplifier in which the bias of the input electrode and the alternating input signal are such that output current flows at all times.

Class B Amplifier. An amplifier in which the bias of the input electrode is such that the output current is approximately zero when no alternating input signal is applied, and such that when an alternating input signal is applied, the output current flows approximately one-half cycle.

Collector Transition Capacitance. The capacitance across the collector-to-base transition region. (A transition region is a region between two homogeneous semiconductor regions, in which the impurity concentration changes).

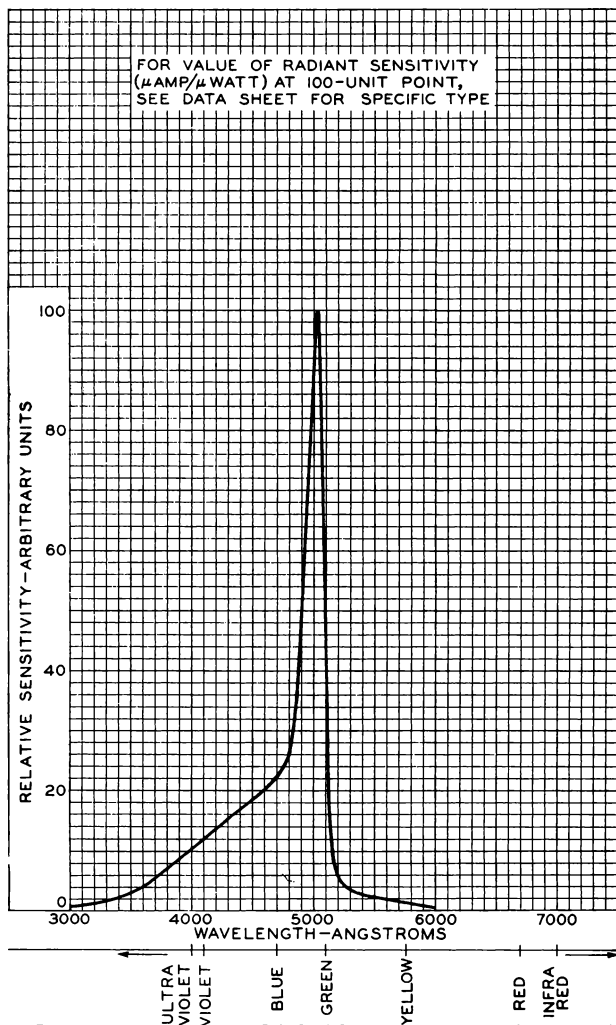
Unilateralization. Unilateralization is a special case of neutralization in that the feedback parameters are completely balanced out. In the case of transistors, these feedback parameters include a resistive component in addition to a capacitive component. Unilateralization changes a bilateral network into a unilateral network.

Alpha-Cutoff Frequency. Frequency at which the forward current gain drops to 0.707 times its low-frequency (1-kc) value.



SPECTRAL SENSITIVITY CHARACTERISTIC OF PHOTOCONDUCTIVE CELL HAVING S-12 RESPONSE

FOR EQUAL VALUES OF RADIANT FLUX AT ALL WAVELENGTHS



MAR. 31, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8569



PRICES[□]
OF SEMICONDUCTOR DEVICES

Type	Schedule D [●]	Schedule U [▲]
1N34-A.....	\$ 2.00	-
1N38-A.....	-	\$ 2.55
1N54-A.....	-	1.45
1N55-A.....	-	4.70
1N56-A.....	-	1.45
1N58-A.....	-	1.80
2N32.....	-	15.40
2N33.....	-	23.00
2N34.....	-	13.40
2N35.....	-	18.40

□ This price list applies only in the United States of America and is subject to change without notice. All prices are exclusive of all Federal, State and local excise, sales, and similar taxes.

▲ Schedule U shows user prices for types priced for distribution through other than dealer and service channels.

● Schedule D shows list prices for types priced for distribution through dealer and service channels.

INFORMATION ON PURCHASING ABOVE TYPES

Information as to where *RCA Semiconductor Devices* can be purchased may be obtained from our *regional office* nearest you or from *Tube Department, Radio Corporation of America, Harrison, N.J.*

AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

**SEMICONDUCTOR
DEVICE PRICES**



IN34-A

IN34-A CRYSTAL DIODE

GERMANIUM POINT-CONTACT TYPE

A general-purpose type intended for low-power rectification in applications such as isolating, clipping, and switching circuits, as well as in certain meter circuits.

DATA

General:

Maximum Envelope Length (including studs)	15/16"
Maximum Envelope Diameter	1/4"
Maximum Overall Length (including flexible leads)	4-3/16"
Leads, Flexible	2
Length	1-3/8" to 1-5/8"
Diameter	0.025"
Envelope, Glass	T-1-1/2
Operating Position	Any

RECTIFIER SERVICE

For frequencies of 25 cps and above

Maximum Ratings, Absolute Values:

PEAK INVERSE VOLTAGE	60 max.	volts
FORWARD CURRENT:		
Peak	150 max.	ma
Average*	50 max.	ma
FAULT CURRENT [▲] (For duration of 1 sec. max.)	500 max.	ma
AMBIENT TEMPERATURE RANGE	-50 to +75	°C

Characteristics at Ambient Temperature of 25°C:

Minimum Forward Current at dc volts = 1	5	ma
Maximum Average Inverse Current:		
At dc volts = -10	30	μamp
At dc volts = -50	500	μamp
Minimum Peak Inverse Voltage for zero-dynamic resistance	75	volts
Shunt Capacitance (Approx.) - Measured Between Studs	1	μf

* Averaged over one conduction cycle.

▲ Maximum fault current is the highest value of current that should be permitted to flow through the diode under a fault condition such as load short circuit.

AUG. 1, 1953

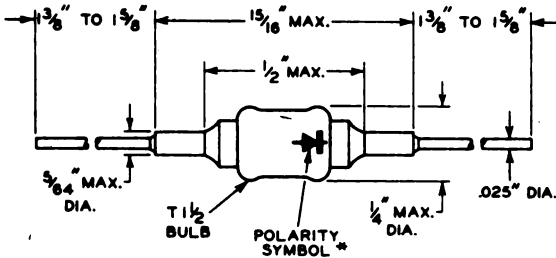
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

IN34-A

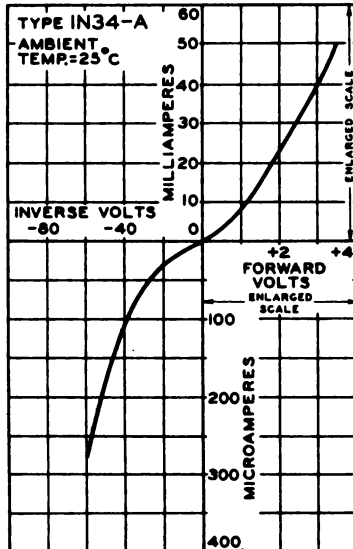


IN34-A CRYSTAL DIODE



*ARROW INDICATES DIRECTION OF FORWARD (EASY) CURRENT AS INDICATED BY DC AMMETER.
92CS-7980

STATIC CHARACTERISTIC



92CS-7976T

AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-7980-7976T



1N38-A

CRYSTAL DIODE

GERMANIUM POINT-CONTACT TYPE

A large-signal type having a high peak inverse voltage rating and intended for use in electronic computers and clamping circuits.

1N38-A

DATA

General:

Maximum Envelope Length (including studs)	15/16"
Maximum Envelope Diameter	1/4"
Maximum Overall Length (including flexible leads)	4-3/16"
Leads, Flexible	2
Length	1-3/8" to 1-5/8"
Diameter	0.025"
Envelope, Glass	T-1-1/2
Operating Position	Any

RECTIFIER SERVICE

For frequencies of 25 cps and above

Maximum Ratings, Absolute Values:

PEAK INVERSE VOLTAGE	100 max.	volts
FORWARD CURRENT:		
Peak	150 max.	ma
Average*	50 max.	ma
FAULT CURRENT [▲] (For duration of 1 sec. max.)	500 max.	ma
AMBIENT TEMPERATURE RANGE	-50 to +75	°C

Characteristics at Ambient Temperature of 25°C:

Minimum Forward Current at dc volts = 1	4	ma
Maximum Average Inverse Current:		
At dc volts = -3	5	μamp
At dc volts = -100	500	μamp
Minimum Peak Inverse Voltage for zero dynamic resistance	120	volts
Shunt Capacitance (Approx.) - Measured Between Studs	1	μf

* Averaged over one conduction cycle.

[▲] Maximum fault current is the highest value of current that should be permitted to flow through the diode under a fault condition such as load short circuit.

DIMENSIONAL OUTLINE

for Type 1N38-A is the same as that shown for Type 1N34-A

AUG. 1, 1953

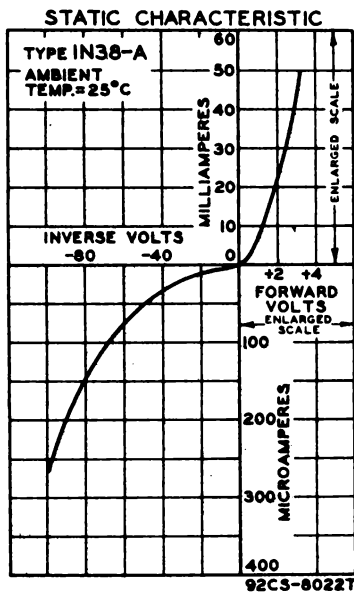
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

IN38-A



IN38-A CRYSTAL DIODE



AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-8022T



IN54-A

CRYSTAL DIODE

GERMANIUM POINT-CONTACT TYPE

A high-back-resistance type intended for use in clipping circuits, high-impedance high-voltage probes, dc restorer circuits, and high-impedance detector circuits.

DATA

General:

Maximum Envelope Length (Including studs)	15/16"
Maximum Envelope Diameter	1/4"
Maximum Overall Length (Including flexible leads)	4-3/16"
Leads, Flexible	2
Length	1-3/8" to 1-5/8"
Diameter	0.025"
Envelope, Glass	T-1-1/2
Operating Position	Any

RECTIFIER SERVICE

For frequencies of 25 cps and above

Maximum Ratings, Absolute Values:

PEAK INVERSE VOLTAGE	50 max.	volts
FORWARD CURRENT:		
Peak	150 max.	ma
Average*	50 max.	ma
FAULT CURRENT ^Δ (For duration of 1 sec. max.)	500 max.	ma
AMBIENT TEMPERATURE RANGE	-50 to +75	°C

Characteristics at Ambient Temperature of 25°C:

Minimum Forward Current at dc volts = 1	5	ma
Maximum Average Inverse Current:		
At dc volts = -10	7	μamp
At dc volts = -50	100	μamp
Minimum Peak Inverse Voltage for zero dynamic resistance	75	volts
Shunt Capacitance (Approx.)		
Measured Between Studs	1	μf

* Averaged over one conduction cycle.

^Δ Maximum fault current is the highest value of current that should be permitted to flow through the diode under a fault condition such as load short circuit.

DIMENSIONAL OUTLINE

for Type 1N54-A is the same as that shown for Type 1N34-A

AUG.1, 1953

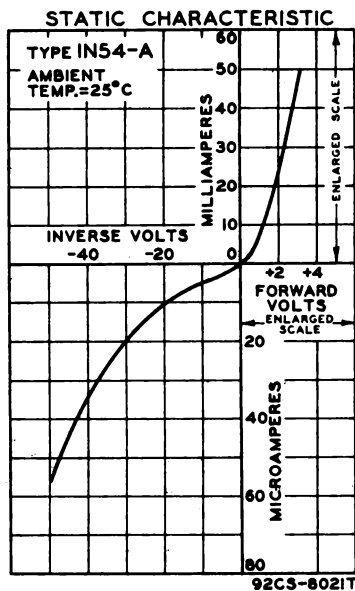
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

IN54-A



IN54-A CRYSTAL DIODE



AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-8021T



1N55-A

CRYSTAL DIODE

GERMANIUM POINT-CONTACT TYPE

A large-signal type having a high peak inverse voltage rating and intended for use in electronic computers, clamping circuits, dc restorer circuits, and in high-voltage probes.

DATA

General:

Maximum Envelope Length (including studs)	15/16"
Maximum Envelope Diameter	1/4"
Maximum Overall Length (including flexible leads)	4-3/16"
Leads, Flexible	2
Length	1-3/8" to 1-5/8"
Diameter	0.025"
Envelope, Glass	T-1-1/2
Operating Position	Any

RECTIFIER SERVICE

For frequencies of 25 cps and above

Maximum Ratings, Absolute Values:

PEAK INVERSE VOLTAGE	150 max.	volts
FORWARD CURRENT:		
Peak	150 max.	ma
Average*	50 max.	ma
FAULT CURRENT [▲] (For duration of 1 sec. max.)	500 max.	ma
AMBIENT TEMPERATURE RANGE	-50 to +75	°C

Characteristics at Ambient Temperature of 25°C:

Minimum Forward Current at dc volts = 1	4	ma
Maximum Average Inverse Current:		
At dc volts = -150	500	μamp
Minimum Peak Inverse Voltage for zero dynamic resistance	170	volts
Shunt Capacitance (Approx.)—		
Measured Between Studs	1	μf

* Averaged over one conduction cycle.

[▲] Maximum fault current is the highest value of current that should be permitted to flow through the diode under a fault condition such as load short circuit.

DIMENSIONAL OUTLINE

for Type 1N55-A is the same as that shown for Type 1N34-A

AUG.1, 1953

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

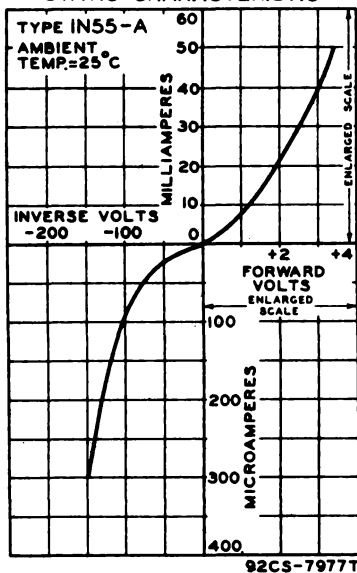
1N55-A

IN55-A



IN55-A CRYSTAL DIODE

STATIC CHARACTERISTIC



AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-7977T



IN56-A

CRYSTAL DIODE

GERMANIUM POINT-CONTACT TYPE

A high-conduction type featuring exceptionally low dynamic impedance and intended for limiter service in FM receivers.

IN56-A

DATA

General:

Maximum Envelope Length (including studs)	15/16"
Maximum Envelope Diameter	1/4"
Maximum Overall Length (including flexible leads)	4-3/16"
Leads, Flexible	2
Length	1-3/8" to 1-5/8"
Diameter	0.025"
Envelope, Glass	T-1-1/2
Operating Position	Any

RECTIFIER SERVICE

For frequencies of 25 cps and above

Maximum Ratings, Absolute Values:

PEAK INVERSE VOLTAGE	40 max.	volts
FORWARD CURRENT:		
Peak	200 max.	ma
Average*	60 max.	ma
FAULT CURRENT [▲] (For duration of 1 sec. max.)	1000 max.	ma
AMBIENT TEMPERATURE RANGE	-50 to +75	°C

Characteristics at Ambient Temperature of 25°C:

Minimum Forward Current at dc volts = 1	15	ma
Maximum Average Inverse Current:		
At dc volts = -30	300	μamp
Minimum Peak Inverse Voltage for zero dynamic resistance	50	volts
Shunt Capacitance (Approx.) - Measured Between Studs)	1	μf

* Averaged over one conduction cycle.

▲ Maximum fault current is the highest value of current that should be permitted to flow through the diode under a fault condition such as load short circuit.

DIMENSIONAL OUTLINE

for Type 1N56-A is the same as that shown for Type 1N34-A

AUG. 1, 1953

TUBE DEPARTMENT

TENTATIVE DATA

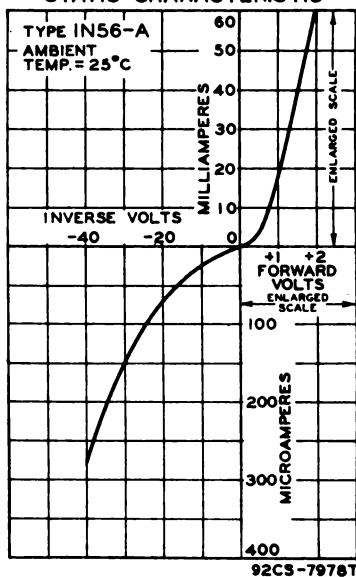
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

IN56-A



IN56-A CRYSTAL DIODE

STATIC CHARACTERISTIC



AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-7978T



IN58-A

CRYSTAL DIODE

GERMANIUM POINT-CONTACT TYPE

A large-signal type having a high peak inverse voltage rating and intended for use in electronic computers, clamping circuits, dc restorer circuits, and in high-voltage probes.

IN58-A

DATA

General:

Maximum Envelope Length (including studs)	15/16"
Maximum Envelope Diameter	1/4"
Maximum Overall Length (including flexible leads)	4-3/16"
Leads, Flexible	2
Length	1-3/8" to 1-5/8"
Diameter	0.025"
Envelope, Glass	T-1-1/2
Operating Position	Any

RECTIFIER SERVICE

For frequencies of 25 cps and above

Maximum Ratings, Absolute Values:

PEAK INVERSE VOLTAGE	100 max.	volts
FORWARD CURRENT:		
Peak	150 max.	ma
Average*	50 max.	ma
FAULT CURRENT [▲] (For duration of 1 sec. max.)	500 max.	ma
AMBIENT TEMPERATURE RANGE	-50 to +75	°C

Characteristics at Ambient Temperature of 25°C:

Minimum Forward Current at dc volts = 1	4	ma
Maximum Average Inverse Current:		
At dc volts = -100	600	μamp
Minimum Peak Inverse Voltage for		
zero dynamic resistance	120	volts
Shunt Capacitance (Approx.)-		
Measured Between Studs	1	μμf

* Averaged over one conduction cycle.

▲ Maximum fault current is the highest value of current that should be permitted to flow through the diode under a fault condition such as load short circuit.

DIMENSIONAL OUTLINE

for Type 1N58-A is the same as that shown for Type 1N34-A

AUG. 1, 1953

TUBE DEPARTMENT

TENTATIVE DATA

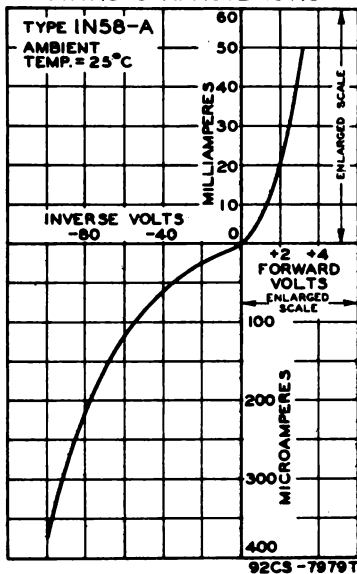
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

IN58-A



IN58-A CRYSTAL DIODE

STATIC CHARACTERISTIC



AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-7979T



INI763

SILICON RECTIFIER

DIFFUSED-JUNCTION TYPE

For use in power supplies of color and black-and-white television receivers, radio receivers, phonographs, and other electronic equipment

INI763

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter.	0.400"
Case.	Metal
Envelope Seals.	Hermetic
Leads, Flexible	2
Minimum length.	1.250"
Diameter.	0.027" to 0.035"

RECTIFIER SERVICE

Maximum Ratings, Absolute-Maximum Values:

*For power-supply frequency of 60 cps
and with capacitor input to filter*

PEAK INVERSE VOLTAGE.	400 max.	volts
RMS SUPPLY VOLTAGE.	140 max.	volts
FORWARD CURRENT:		
<i>At ambient temperatures . . . Up to 75° C Above 75° C</i>		
DC.	0.5 max.	amp
Peak, recurrent	5 max.	amp
Surge, for a "turn-on" transient of 2-milli- seconds duration.	35 max.	amp
AMBIENT TEMPERATURE (During operation).	100 max.	°C
STORAGE-TEMPERATURE RANGE . . .	-65 to +150	°C

See
Rating
Chart

Characteristics:

At ambient temperature of 25° C

Maximum Instantaneous Forward Voltage at instantaneous for- ward amperes = 15	3	volts
Maximum Reverse Current at peak inverse volts = 400. . .	100	μa

At ambient temperature of 100° C

Maximum Reverse Current at peak inverse volts = 400. . .	1	ma
---	---	----

Typical Operation:

As half-wave rectifier

RMS Supply Voltage.	117	117	volts
Filter-Input Capacitor (C). . .	50	100	μf
Surge-Limiting Resistance▲. . .	5.6	5.6	ohms

▲: See next page.

INI763



INI763

SILICON RECTIFIER

DC Output Voltage at input to filter (Approx.):				
At half-load ma. = 250. . . .	126	146	150	volts
At full-load ma. = 500. . . .	100	132	139	volts
Voltage Regulation (Approx.):				
Half-load to full-load current	26	14	11	volts
<i>As half-wave voltage doubler</i>				
RMS Supply Voltage.	117		117	volts
Filter-Input Capacitor (C). . .	100		250	μ f
Surge-Limiting Resistance [▲] . . .	5.6		5.6	ohms
DC Output Voltage at input to filter (Approx.):				
At half-load ma. = 250. . . .	273		288	volts
At full-load ma. = 500. . . .	235		262	volts
Voltage Regulation (Approx.):				
Half-load to full-load current	38		26	volts
<i>As full-wave voltage doubler</i>				
RMS Supply Voltage.	117	117	117	volts
Filter-Input Capacitor (C). . .	50	100	250	μ f
Surge-Limiting Resistance [▲] . . .	5.6	5.6	5.6	ohms
DC Output Voltage at input to filter (Approx.):				
At half-load ma. = 250. . . .	260	280	290	volts
At full-load ma. = 500. . . .	220	260	275	volts
Voltage Regulation (Approx.):				
Half-load to full-load current	40	20	15	volts

[▲] The transformer series resistance or other resistance in the line may be deducted from the value shown.

OPERATING CONSIDERATIONS

A *surge-limiting resistor* should always be connected in series with the rectifier. The resistance value must be sufficient to limit the peak and surge currents to the value specified under the maximum ratings.

The *flexible leads* of the INI763 are usually soldered to the circuit elements. The rectifier, however, may be mounted in a holder of the fuse-clip type. It is desirable in all soldering operations to provide some slack or an expansion elbow in the leads to prevent excessive tension on the leads. It is important during the soldering operation to avoid excessive heat in order to prevent possible damage to the rectifier. To absorb some of the heat, grip the flexible lead of the rectifier between the case and the soldering point with a pair of pliers.

When dip soldering is employed in the assembly of printed circuitry using the INI763, the temperature of the solder should



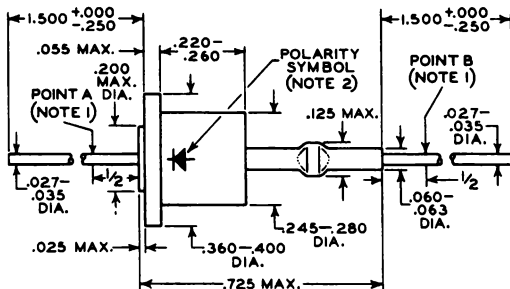
INI763

SILICON RECTIFIER

INI763

not exceed 255° C for a maximum immersion period of 10 seconds. Furthermore, the leads should not be dip soldered beyond points A and B indicated on the *Dimensional Outline*.

Because the metal case of the INI763 is operated at voltages which are dangerous, care should be taken in the design of equipment to prevent the operator from coming in contact with the metal case. It is recommended that the rectifier be mounted on the underside of the chassis.



DIMENSIONS IN INCHES

92CS-9726R1

- NOTE 1:** DO NOT DIP SOLDER BEYOND POINTS A AND B.
NOTE 2: ARROW INDICATES DIRECTION OF FORWARD (EASY) CURRENT FLOW AS INDICATED BY DC AMMETER.

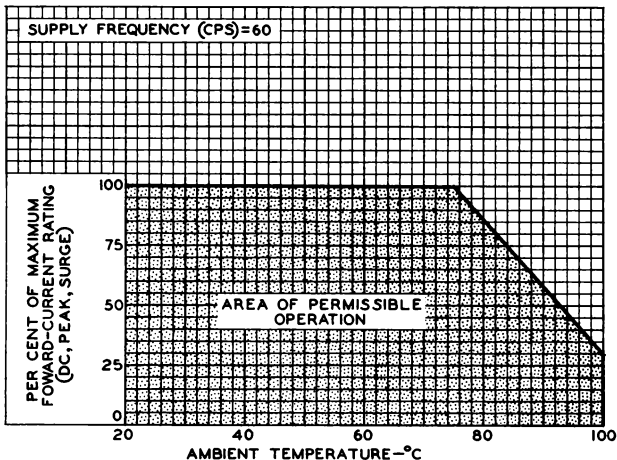
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INI763



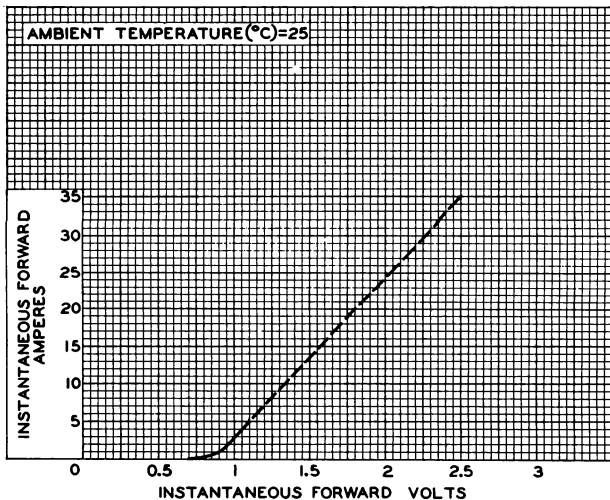
INI763

RATING CHART



92CS-9727

TYPICAL CHARACTERISTIC



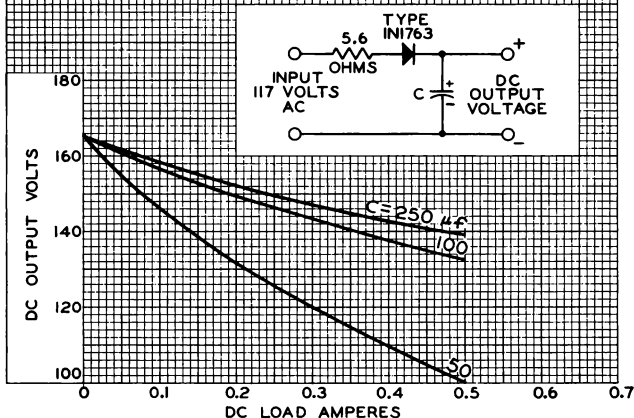
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RADIO CORPORATION OF AMERICA, SOMERVILLE, NEW JERSEY

92CS-9730



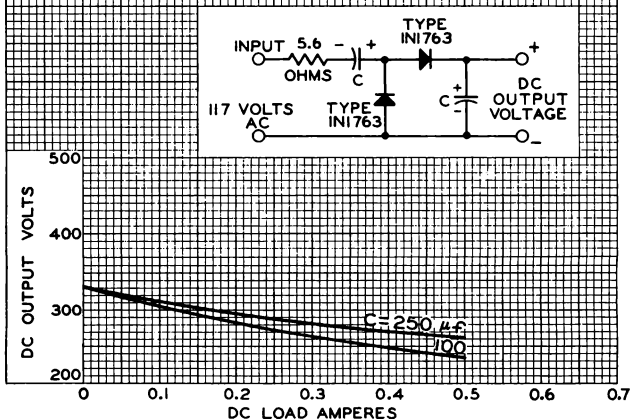
INI763

INI763

TYPICAL CHARACTERISTICS
HALF-WAVE RECTIFIERAMBIENT TEMPERATURE ($^{\circ}\text{C}$) = 25
SUPPLY FREQUENCY (CPS) = 60

92CS-9723

HALF-WAVE VOLTAGE DOUBLER

AMBIENT TEMPERATURE ($^{\circ}\text{C}$) = 25
SUPPLY FREQUENCY (CPS) = 60SEMICONDUCTOR and MATERIALS DIVISION
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92CS-9720

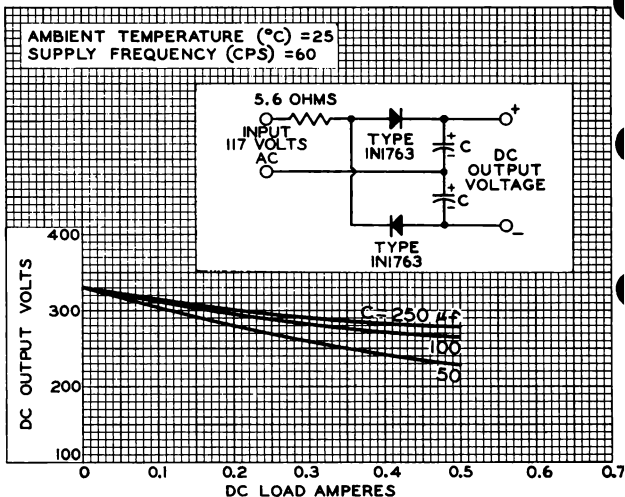
INI763



INI763

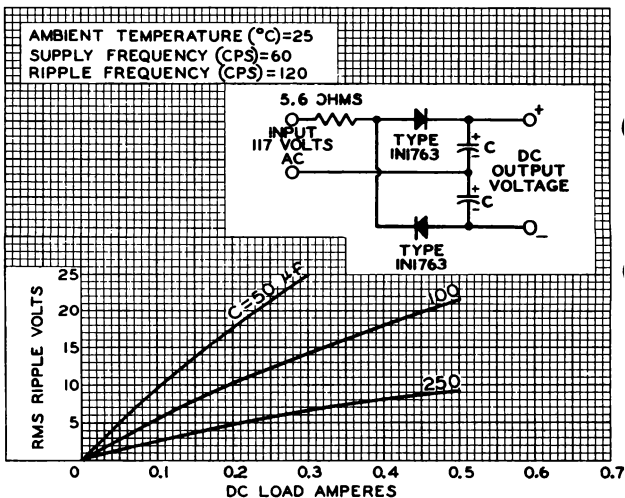
TYPICAL CHARACTERISTICS FULL-WAVE VOLTAGE DOUBLER

AMBIENT TEMPERATURE ($^{\circ}\text{C}$) = 25
SUPPLY FREQUENCY (CPS) = 60



92CS-9716

AMBIENT TEMPERATURE ($^{\circ}\text{C}$) = 25
SUPPLY FREQUENCY (CPS) = 60
RIPPLE FREQUENCY (CPS) = 120



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RADIO CORPORATION OF AMERICA, SOMERVILLE, NEW JERSEY

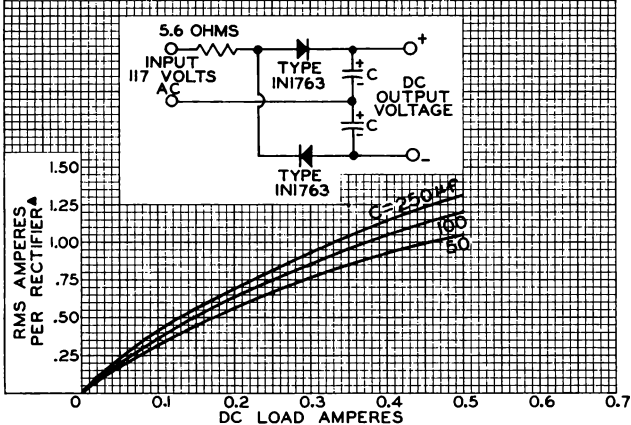
92CS-9742



IN1763

TYPICAL CHARACTERISTICS FULL-WAVE VOLTAGE DOUBLER

▲MULTIPLY BY $\sqrt{2}$ FOR BOTH RECTIFIERS.
AMBIENT TEMPERATURE ($^{\circ}\text{C}$) = 25
SUPPLY FREQUENCY (CPS) = 60



92CS-9982



INI764

SILICON RECTIFIER

DIFFUSED-JUNCTION TYPE

For use in power supplies of color and black-and-white television receivers, radio receivers, phonographs, and other electronic equipment

INI764

GENERAL DATA

Mechanical:

Operating Position	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter	0.400"
Case	Metal
Envelope Seals	Hermetic
Leads, Flexible.	2
Minimum length	1.250"
Diameter	0.027" to 0.035"

RECTIFIER SERVICE

Maximum Ratings, Absolute-Maximum Values:

*For power-supply frequency of 60 cps
and with capacitor input to filter*

PEAK INVERSE VOLTAGE	500 max.	volts
RMS SUPPLY VOLTAGE	175 max.	volts

FORWARD CURRENT:

<i>At ambient temperatures. . . Up to 75° C</i>	<i>Above 75° C</i>	
DC	0.5 max.	amp
Peak, recurrent.	5 max.	amp
Surge, for a "turn-on" transient of 2-milli- seconds duration	35 max.	amp
AMBIENT TEMPERATURE (During operation)	100 max.	°C
STORAGE-TEMPERATURE RANGE. . .	-65 to +150	°C

See
Rating
Chart

Characteristics:

At ambient temperature of 25° C

Maximum Instantaneous Forward Voltage at instantaneous for- ward amperes = 15.	3	volts
Maximum Reverse Current at peak inverse volts = 500 . .	100	μa

At ambient temperature of 100° C

Maximum Reverse Current at peak inverse volts = 500 . .	1	ma
--	---	----

Typical Operation:

As half-wave rectifier

RMS Supply Voltage	150	150	150	volts
Filter-Input Capacitor (C)	50	100	250	μf
Surge-Limiting Resistance [▲] . . .	6.8	6.8	6.8	ohms

[▲]: See next page.



INI764

SILICON RECTIFIER

DC Output Voltage at input to filter (Approx.):				
At half-load ma. = 250. . . .	158	184	190	volts
At full-load ma. = 500. . . .	128	170	178	volts
Voltage Regulation (Approx.):				
Half-load to full-load current	30	14	12	volts
<i>As half-wave voltage doubler</i>				
RMS Supply Voltage.	150	150		volts
Filter-Input Capacitor (C). . .	100	250		μf
Surge-Limiting Resistance [▲] . . .	6.8	6.8		ohms
DC Output Voltage at input to filter (Approx.):				
At half-load ma. = 250. . . .	345	367		volts
At full-load ma. = 500. . . .	301	336		volts
Voltage Regulation (Approx.):				
Half-load to full-load current	44	31		volts
<i>As full-wave voltage doubler</i>				
RMS Supply Voltage.	150	150	150	volts
Filter-Input Capacitor (C). . .	50	100	250	μf
Surge-Limiting Resistance [▲] . . .	6.8	6.8	6.8	ohms
DC Output Voltage at input to filter (Approx.):				
At half-load ma. = 250. . . .	340	370	380	volts
At full-load ma. = 500. . . .	290	340	360	volts
Voltage Regulation (Approx.):				
Half-load to full-load current	50	30	20	volts

▲ The transformer series resistance or other resistance in the line may be deducted from the value shown.

OPERATING CONSIDERATIONS

A *surge-limiting resistor* should always be connected in series with the rectifier. The resistance value must be sufficient to limit the peak and surge currents to the value specified under the maximum ratings.

The *flexible leads* of the INI764 are usually soldered to the circuit elements. The rectifier, however, may be mounted in a holder of the fuse-clip type. It is desirable in all soldering operations to provide some slack or an expansion elbow in the leads to prevent excessive tension on the leads. It is important during the soldering operation to avoid excessive heat in order to prevent possible damage to the rectifier. To absorb some of the heat, grip the flexible lead of the rectifier between the case and the soldering point with a pair of pliers.

When dip soldering is employed in the assembly of printed circuitry using the INI764, the temperature of the solder should



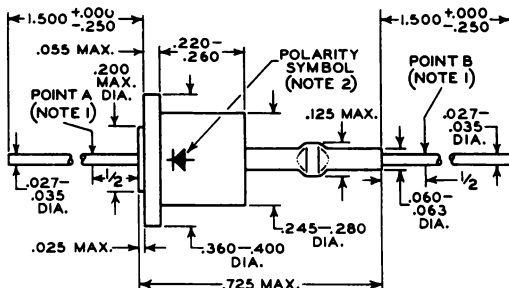
INI764

SILICON RECTIFIER

INI764

not exceed 255° C for a maximum immersion period of 10 seconds. Furthermore, the leads should not be dip soldered beyond points A and B indicated on the *Dimensional Outline*.

Because the metal case of the INI764 is operated at voltages which are dangerous, care should be taken in the design of equipment to prevent the operator from coming in contact with the metal case. It is recommended that the rectifier be mounted on the underside of the chassis.



DIMENSIONS IN INCHES

92CS-9728RI

NOTE 1: DO NOT DIP SOLDER BEYOND POINTS A AND B.

NOTE 2: ARROW INDICATES DIRECTION OF FORWARD (EASY) CURRENT FLOW AS INDICATED BY DC AMMETER.

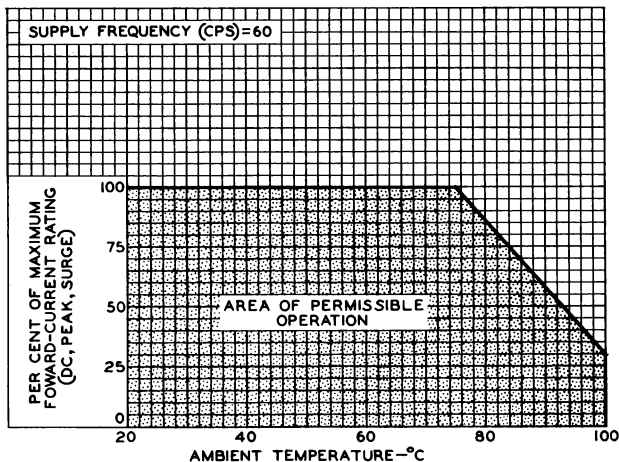
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INI764



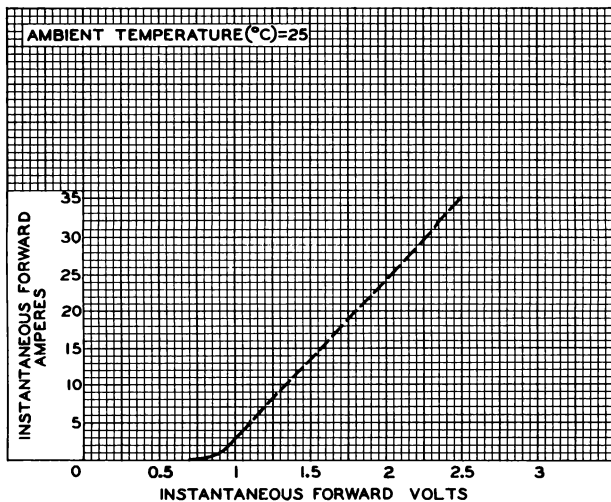
INI764

RATING CHART



92CS-9727

TYPICAL CHARACTERISTIC



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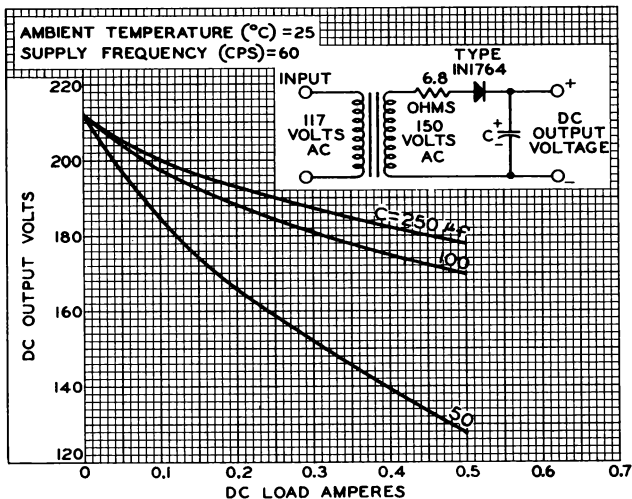
92CS-9730



INI764

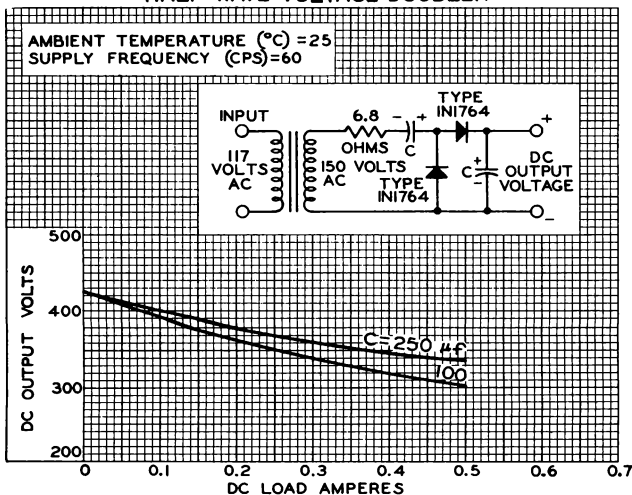
TYPICAL CHARACTERISTICS HALF-WAVE RECTIFIER

INI764



92CS-9722

HALF-WAVE VOLTAGE DOUBLER



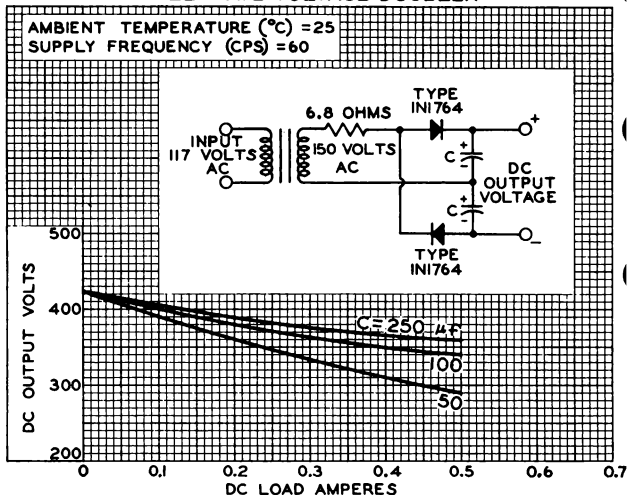
INI764



INI764

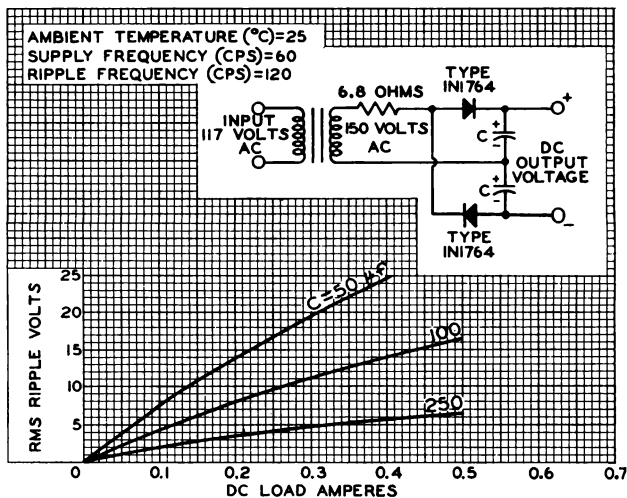
TYPICAL CHARACTERISTICS FULL-WAVE VOLTAGE DOUBLER

AMBIENT TEMPERATURE (°C) = 25
SUPPLY FREQUENCY (CPS) = 60



92CS-9717

AMBIENT TEMPERATURE (°C) = 25
SUPPLY FREQUENCY (CPS) = 60
RIPPLE FREQUENCY (CPS) = 120



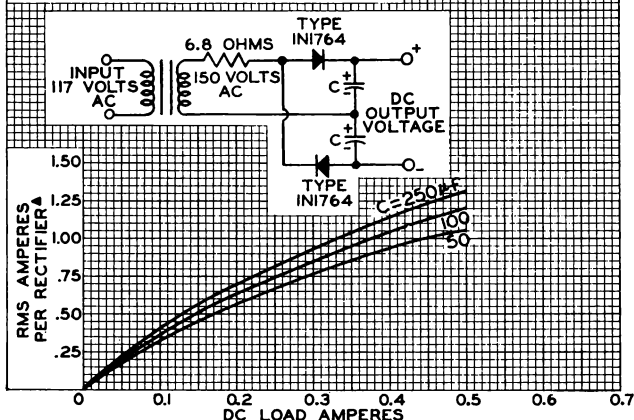


INI764

TYPICAL CHARACTERISTICS FULL-WAVE VOLTAGE DOUBLER

INI764

▲ MULTIPLY BY $\sqrt{2}$ FOR BOTH RECTIFIERS.
AMBIENT TEMPERATURE ($^{\circ}\text{C}$) = 25
SUPPLY FREQUENCY (CPS) = 60



92CS-9988



2N32

2N32

POINT-CONTACT TRANSISTOR

GERMANIUM TYPE FOR PULSE OR SWITCHING APPLICATIONS

DATA

General:

Maximum Overall Length	0.660"
Maximum Seated Length	0.445"
Width	0.320" $\pm$ 0.020"
Maximum Depth	0.240"
Case	Plastic
Base	Small-Oblong Linotetrar 3-Pin
Mounting Position	Any

PULSE or SWITCHING SERVICE

Voltage values are given with respect to base connection

Maximum Ratings, Absolute Values:

COLLECTOR:		
DC Voltage	-40 max.	volts
DC Current	-8 max.	ma
Dissipation	50 max.	mW
EMITTER:		
DC Voltage	-40 max.	volts
DC Current	3 max.	ma
AMBIENT TEMPERATURE	40 max.	°C

Characteristics at Ambient Temperature of 25°C:

With input circuit between emitter and base connection,
and output circuit between collector and base connection

DC Collector Voltage	-25	volts
DC Emitter Current ^o	0.5	ma
Current Amplification Factor	2.2	
Resistance:		
Open-Circuit Input	400	ohms
Open-Circuit Output	31000	ohms
Feedback	140	ohms
Power Gain [#]	21	db
Frequency:		
For Voltage-gain cutoff [†]	0.9	Mc
For alpha cutoff ^{††}	2.7	Mc

Minimum Circuit Values:

Emitter-Circuit Resistance	1000 min.	ohms
--------------------------------------	-----------	------

^o obtained by adjusting a variable resistor in series with power supply to give the desired current.

[#] with collector load resistance of 10000 ohms, signal-source impedance of 500 ohms, and signal frequency of 5000 cycles per second.

[†] measured at a point 3 decibels down from the low-frequency value (100 kc) and with collector load resistance of 20000 ohms, signal-source impedance of 300 ohms, and signal voltage of 25 millivolts rms. The cutoff frequency is defined as the frequency at which the output voltage has dropped to 0.7 of its low-frequency value.

^{††}, see next page.

JUNE 1, 1953

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

2N32



2N32

POINT-CONTACT TRANSISTOR

†† Measured at a point 3 decibels down from its low-frequency value (100 KC). The cutoff frequency is defined as the frequency at which the current amplification factor has dropped to 0.7 of its low-frequency value.

The 2N32 should not be inserted into or withdrawn from its socket with the power "on" because high transient currents may cause permanent damage to the transistor.

JUNE 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

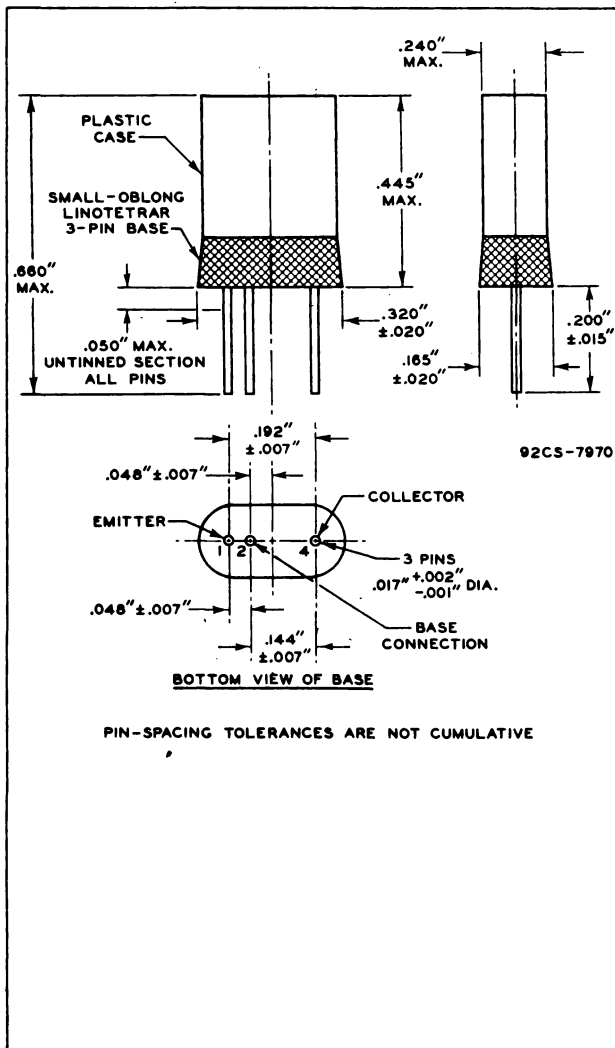
TENTATIVE DATA



2N32

2N32

POINT-CONTACT TRANSISTOR



JUNE 1, 1953

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

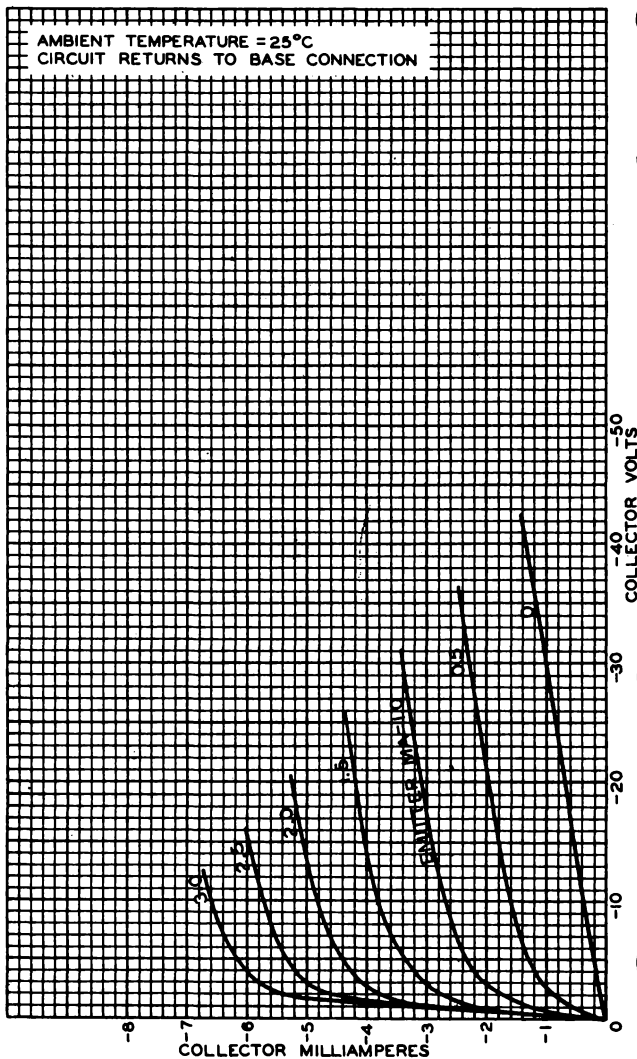
CE-7970

2N32



2N32

AVERAGE COLLECTOR CHARACTERISTICS



APR. 6, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7963



2N33

2N33

POINT-CONTACT TRANSISTOR

GERMANIUM TYPE FOR OSCILLATOR APPLICATIONS UP TO 50 Mc

DATA

General:

Maximum Overall Length	0.660"
Maximum Seated Length	0.445"
Width	0.320" $\pm$.020"
Maximum Depth	0.240"
Case	Plastic
Base	Small-Oblong Linotetrar 3-Pin
Mounting Position	Any

VHF OSCILLATOR SERVICE

Voltage values are given with respect to base connection

Maximum Ratings, Absolute Values:

COLLECTOR:		
DC Voltage	-8.5 max.	volts
DC Current	-7 max.	ma
Dissipation	30 max.	mW
EMITTER:		
DC Current	0.8 max.	ma
AMBIENT TEMPERATURE	40 max.	°C

Typical Operation in Accompanying 50-Mc Oscillator Test Circuit:

COLLECTOR:		
DC Supply Voltage	-8	volts
DC Current	-3.3	ma
DC Emitter Current	0.3	ma
Useful Power Output (Approx.)	1.0	mW

The 2N33 should not be inserted into or withdrawn from its socket with the power "on" because high transient currents may cause permanent damage to the transistor.

OUTLINE DIMENSIONS and TERMINAL CONNECTIONS
for Type 2N33 are the same as those shown for Type 2N32

JUNE 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

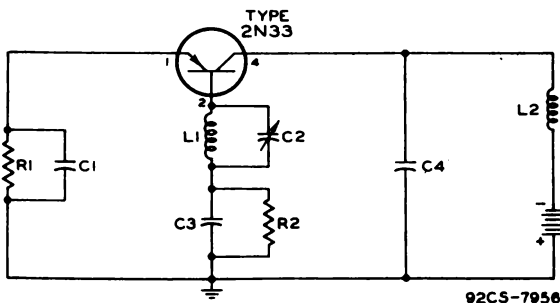
2N33



2N33

POINT-CONTACT TRANSISTOR

50-Mc Oscillator Test Circuit



C1: 1 μ f, ceramic, 25 volts
C2: 4 to 30 μ f, ceramic adjustable, 25 volts
C3: 270 μ f, mica, 25 volts

C4: 470 μ f, mica, 25 volts
L1: 0.46 μ h tank inductance
L2: 1 mh rf choke
R1: 5100 ohms, 0.5 watt
R2: 1000 ohms, 0.5 watt

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JUNE 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-7956



2N34

2N34

JUNCTION TRANSISTOR

P-N-P GERMANIUM TYPE

FOR LOW-POWER, LOW-FREQUENCY APPLICATIONS

DATA

General:

Maximum Overall Length	0.885"
Maximum Seated Length	0.670"
Width	0.320" $\pm$ 0.020"
Depth	0.165" $\pm$ 0.020"
Case	Plastic
Base	Small-Oblong Linotetrar 3-Pin
Mounting Position	Any

AUDIO-FREQUENCY AMPLIFIER SERVICE

Voltages are given with respect to base connection

Maximum Ratings, Absolute Values:

COLLECTOR:

DC Voltage	-25 max.	volts
DC Current	-8 max.	ma
Dissipation	50 max.	mw

EMITTER:

DC Current	8 max.	ma
----------------------	--------	----

AMBIENT TEMPERATURE	50 max.	°C
-------------------------------	---------	----

Characteristics at Ambient Temperature of 25°C:

*With input circuit between base connection and emitter,
and output circuit between collector and emitter*

Collector:

DC Voltage	-6	volts
DC Current	-10 [▲]	μ amp
DC Emitter Current [●]	1	ma
DC Base-Connection Current	-25	μ amp
Current Amplification Factor (Approx.):		
Between Emitter and Collector	0.98	
Between Base Connection and Collector	40	
Power Gain [#]	40	db

[▲] With collector voltage of -12 volts and emitter current of 0 milli-amperes.[●] Obtained by adjusting a variable resistor in series with the power supply to give the desired current.[#] With collector load resistance of 30000 ohms, signal-source impedance of 500 ohms, and signal frequency of 5000 cycles per second.*The 2N34 should not be inserted into or withdrawn from its socket with the power "on" because high transient currents may cause permanent damage to the transistor.*

JUNE 1, 1953

TUBE DEPARTMENT

TENTATIVE DATA

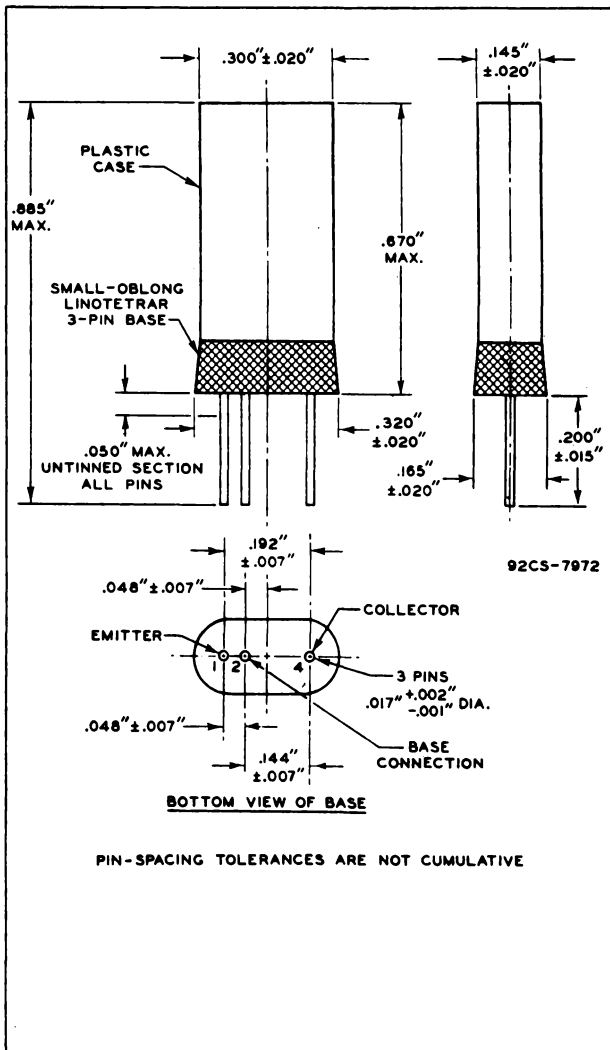
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

2N34



2N34

JUNCTION TRANSISTOR



JUNE 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

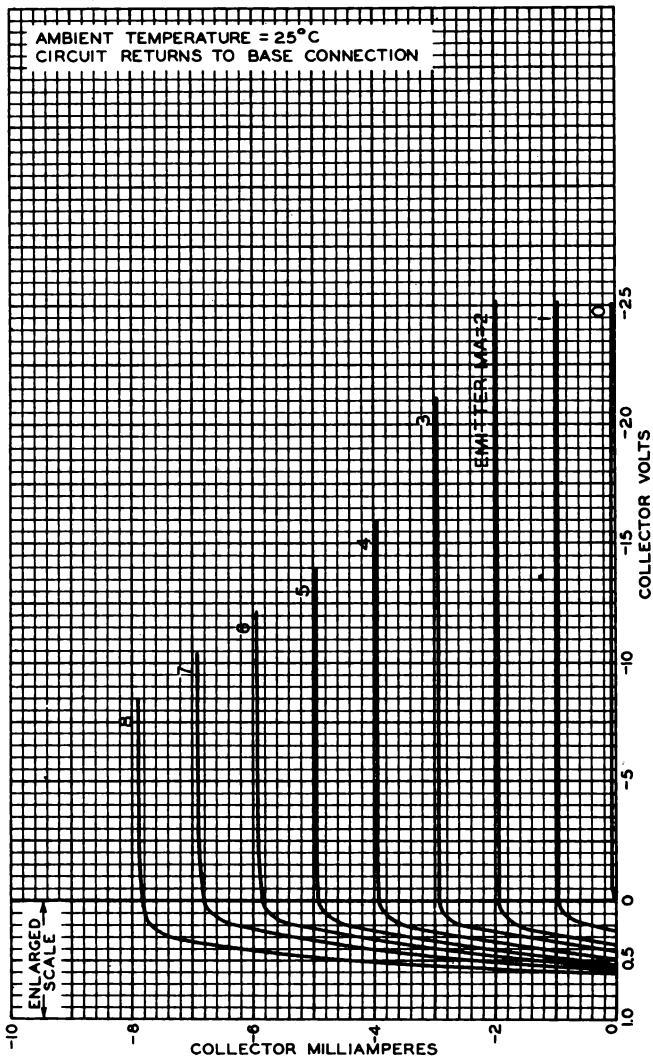
CE-7972



2N34

2N34

AVERAGE COLLECTOR CHARACTERISTICS



APR. 8, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

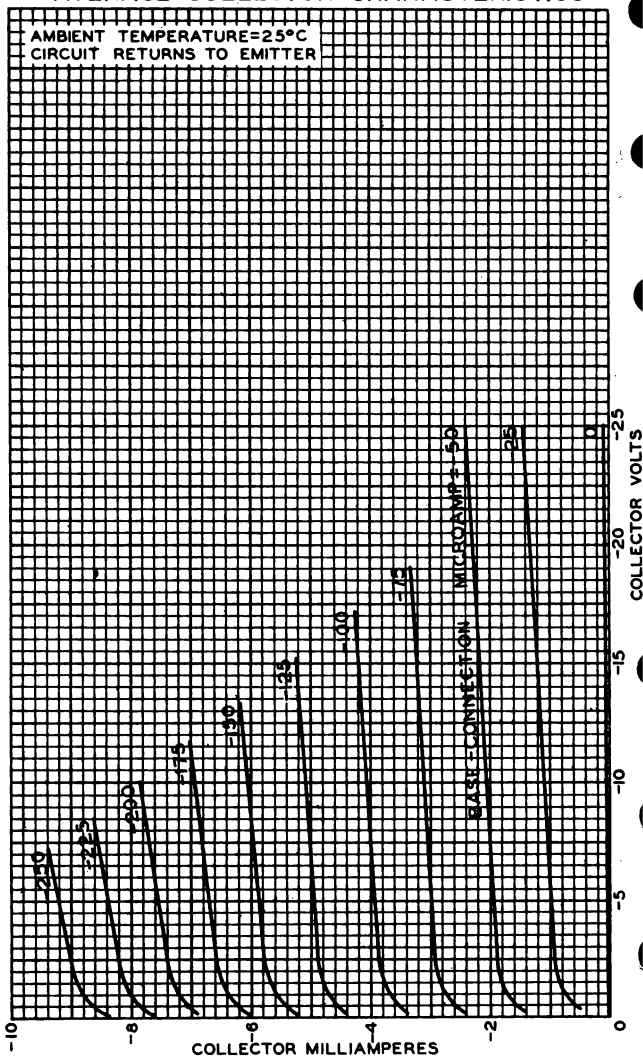
92CM-7962

2N34



2N34

AVERAGE COLLECTOR CHARACTERISTICS



APR. 8, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7961



2N35

2N35

JUNCTION TRANSISTOR

N-P-N GERMANIUM TYPE

FOR LOW-POWER, LOW-FREQUENCY APPLICATIONS

DATA

General:

Maximum Overall Length	0.885"
Maximum Seated Length	0.670"
Width	0.320" $\pm$ 0.020"
Depth	0.165" $\pm$ 0.020"
Case	Plastic
Base	Small-Oblong Linotetrar 3-Pin
Mounting Position	Any

AUDIO-FREQUENCY AMPLIFIER SERVICE

Voltagcs arc given with respect to base connection

Maximum Ratings, Absolute Values:

COLLECTOR:

DC Voltage	25 max.	volts
DC Current	8 max.	ma
Dissipation	50 max.	mW

EMITTER:

DC Current	-8 max.	ma
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AMBIENT TEMPERATURE

50 max. °C

Characteristics at Ambient Temperature of 25°C:

*With input circuit between base connection and emitter,
and output circuit between collector and emitter*

Collector:

DC Voltage	6	volts
DC Current	10 $\Delta\Delta$	μ amp
DC Emitter Current [*]	-1	ma
DC Base-Connection Current	25	μ amp

Current Amplification Factor (Approx.):

Between Emitter and Collector	0.98
Between Base Connection and Collector	40

Power Gain [#]	40	db
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$\Delta\Delta$ with collector voltage of 12 volts and emitter current of 0 milli-amperes.

^{*} obtained by adjusting a variable resistor in series with the power supply to give the desired current.

[#] with collector load resistance of 30000 ohms, signal-source impedance of 500 ohms, and signal frequency of 5000 cycles per second.

The 2N35 should not be inserted into or withdrawn from its socket with the power "on" because high transient currents may cause permanent damage to the transistor.

OUTLINE DIMENSIONS and TERMINAL CONNECTIONS
for Type 2N35 are the same as those shown for Type 2N34

JUNE 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

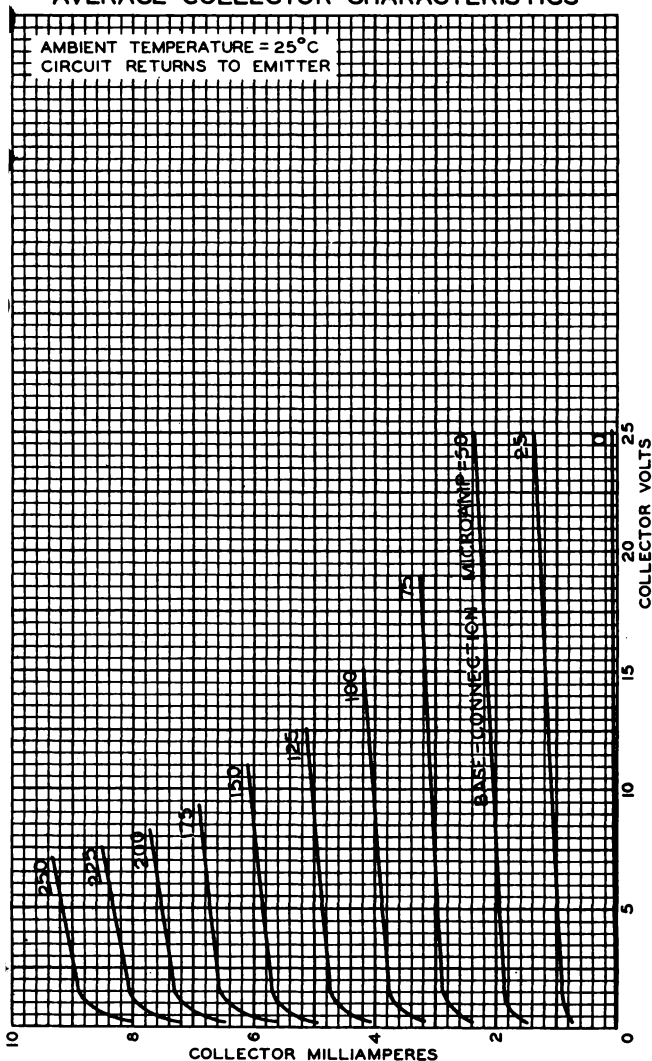
TENTATIVE DATA



2N35

2N35

AVERAGE COLLECTOR CHARACTERISTICS



APR. 7, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

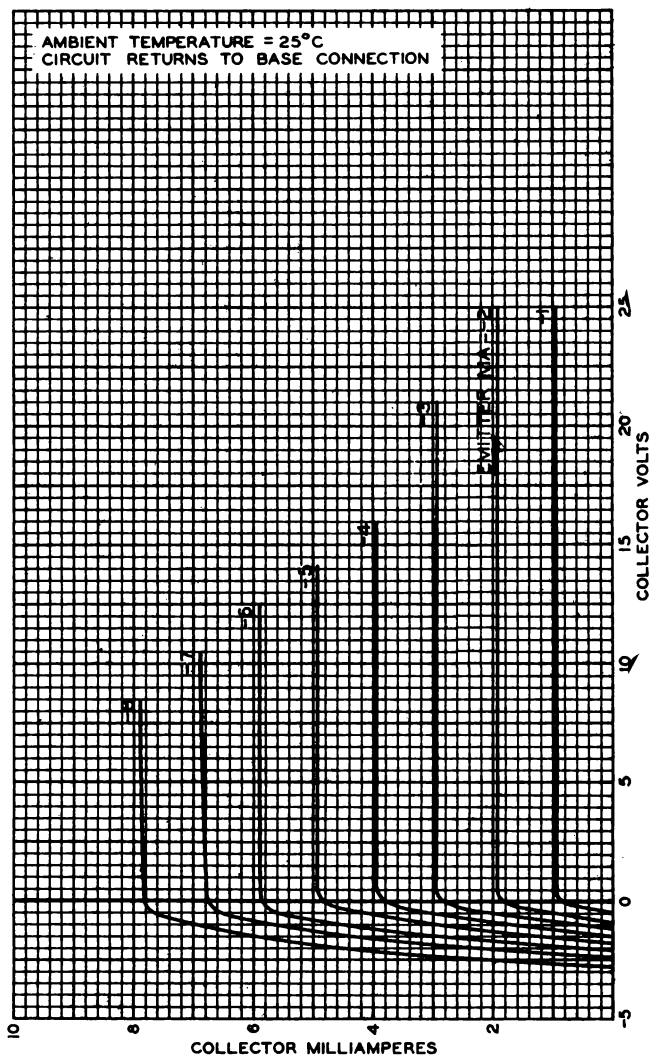
92CM-7959

2N35



2N35

AVERAGE COLLECTOR CHARACTERISTICS



APR. 7, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7960



2N218

JUNCTION TRANSISTOR

GERMANIUM P-N-P ALLOY TYPE

For 455-kc intermediate-frequency applications

2N218

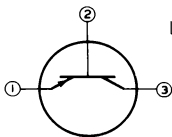
The 2N218 is the same as the 2N139 except for the following items:

Mechanical:

Maximum Length (Excluding flexible leads) 0.405"
 Leads, Flexible 3
 Length. 1.5" $\pm$ 0.015"
 Orientation and diameter. See Dimensional Outline

BOTTOM VIEW

Lead 1 - Emitter



Lead 3 - Collector
 (Adjacent
 to red dot
 on side of
 envelope)

Lead 2 - Base

OPERATING CONSIDERATIONS

The 2N218 should not be connected into or disconnected from circuits with the power on because high transient currents may cause permanent damage to the transistor.

The *flexible leads* of the 2N218 are usually soldered to the circuit elements. Soldering of the leads may be made close to the glass stem provided care is taken to conduct excessive heat away from the lead seal. Otherwise, the heat of the soldering operation will crack the seals of the leads and damage the transistor.

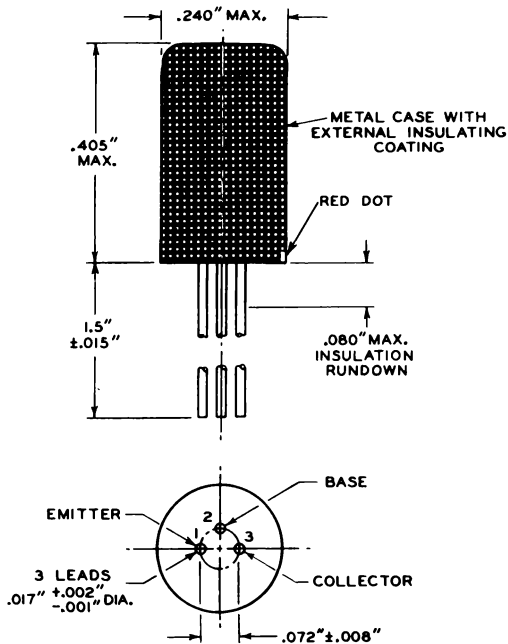
When dip soldering is employed in the assembly of printed circuitry using the 2N218, the temperature of the solder should not exceed 230°C for a maximum immersion period of 10 seconds.

2N218



2N218

JUNCTION TRANSISTOR



92CS-9025



2N219

JUNCTION TRANSISTOR

GERMANIUM P-N-P ALLOY TYPE

For 540 to 1600 kc converter applications

2N219

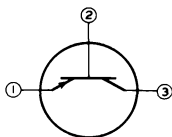
The 2N219 is the same as the 2N140 except for the following items:

Mechanical:

Maximum Length (Excluding flexible leads) 0.405"
 Leads, Flexible 3
 Length. 1.5" $\pm$ 0.015"
 Orientation and diameter. See Dimensional Outline

BOTTOM VIEW

Lead 1 - Emitter



Lead 3 - Collector
 (Adjacent
 to red dot
 on side of
 envelope)

Lead 2 - Base

OPERATING CONSIDERATIONS

The 2N219 should not be connected into or disconnected from circuits with the power on because high transient currents may cause permanent damage to the transistor.

The *flexible leads* of the 2N219 are usually soldered to the circuit elements. Soldering of the leads may be made close to the glass stem provided care is taken to conduct excessive heat away from the lead seal. Otherwise, the heat of the soldering operation will crack the seals of the leads and damage the transistor.

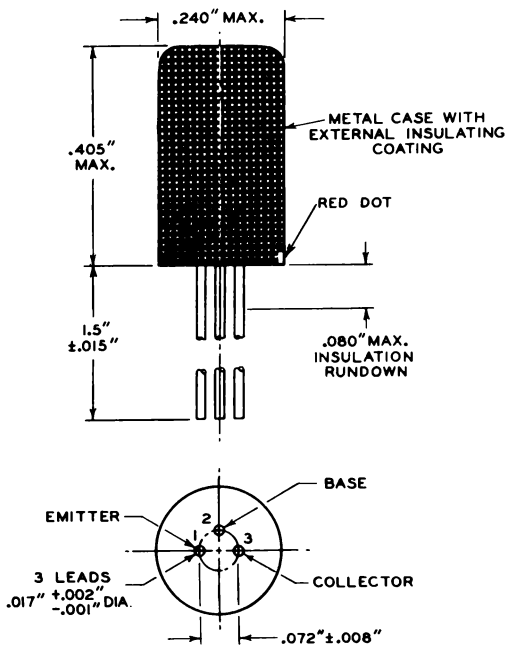
When dip soldering is employed in the assembly of printed circuitry using the 2N219, the temperature of the solder should not exceed 230°C for a maximum immersion period of 10 seconds.

2N219



2N219

JUNCTION TRANSISTOR



92CS-9025



2N220

JUNCTION TRANSISTOR

GERMANIUM P-N-P ALLOY TYPE

For low-noise audio-frequency applications

2N220

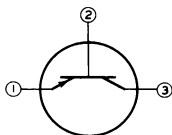
The 2N220 is the same as the 2N175 except for the following items:

Mechanical:

Maximum Length (Excluding flexible leads) 0.405"
Leads, Flexible. 3
Length 1.5" $\pm$ 0.015"
Orientation and diameter See Dimensional Outline

BOTTOM VIEW

Lead 1 - Emitter



Lead 3 - Collector
(Adjacent
to red dot
on side of
envelope)

Lead 2 - Base

OPERATING CONSIDERATIONS

The 2N220 should not be connected into or disconnected from circuits with the power on because high transient currents may cause permanent damage to the transistor.

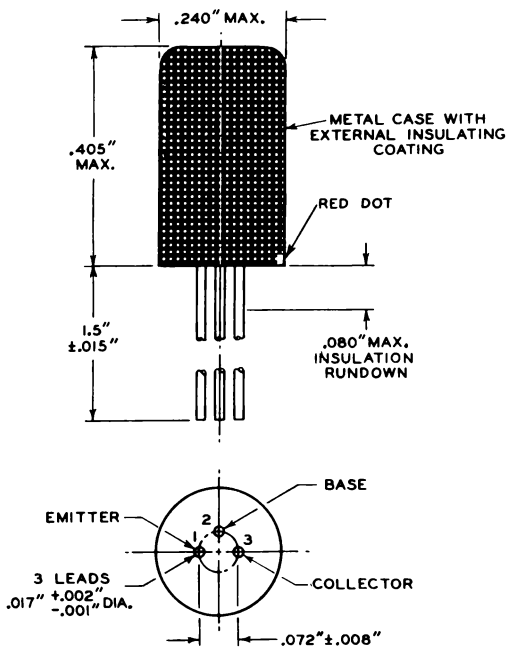
The flexible leads of the 2N220 are usually soldered to the circuit elements. Soldering of the leads may be made close to the glass stem provided care is taken to conduct excessive heat away from the lead seal. Otherwise, the heat of the soldering operation will crack the seals of the leads and damage the transistor.

When dip soldering is employed in the assembly of printed circuitry using the 2N220, the temperature of the solder should not exceed 230°C for a maximum immersion period of 10 seconds.

2N220



2N220 JUNCTION TRANSISTOR



92CS-9025

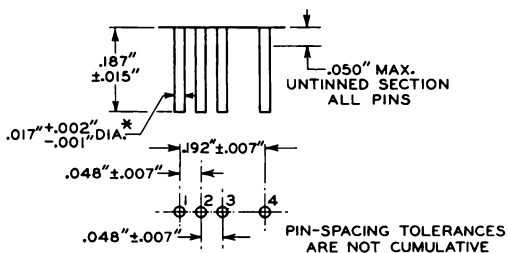


BASES

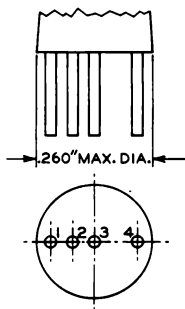
SEMICONDUCTOR DEVICES

"LINOTETRAR"

PIN DIMENSIONS AND ORIENTATION



SMALL-ROUND LINOTETRAR



No. of Pins	Pins	JETEC No.	RCA No.
4-Pin	1, 2, 3, 4	E4-24	-
3-Pin	1, 2, 4	E3-25	-

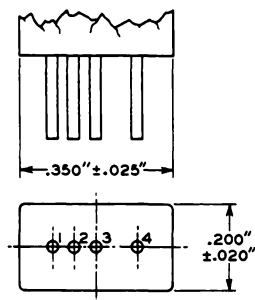
* The specified pin diameter applies only in the zone between 0.050" from the base seat and the end of the pin.



BASES

SEMICONDUCTOR DEVICES

SMALL-RECTANGLE LINOTETRAR



<i>No. of Pins</i>	<i>Pins</i>	<i>JETEC No.</i>	<i>RCA No.</i>
4-Pin	1, 2, 3, 4	E4-31	-
3-Pin	1, 2, 4	E3-32	-
2-Pin	1, 4	E2-33	FS6151

*For other dimensions, see first page
of the "Linotetrar" series*



6694-A



6694-A

PHOTOCONDUCTIVE CELL

▲ For light conditions the same as shown under (*) except that an incident light intensity of 30 foot-candles is used.

DEFINITIONS

Radiant Sensitivity. The quotient of output current by incident radiant power of a given wavelength, at constant electrode voltages.

Luminous Sensitivity. The quotient of output current by incident luminous flux, at constant electrode voltages.

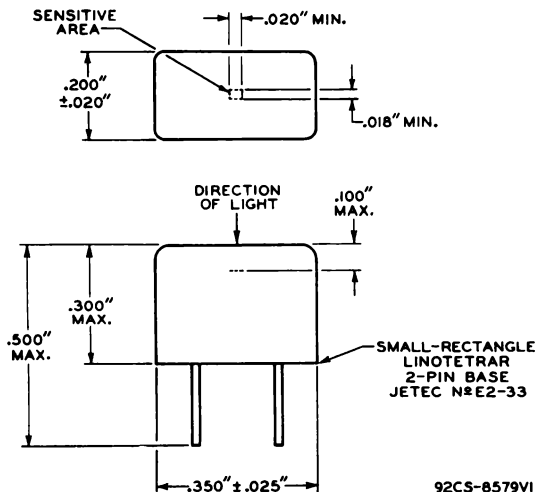
Luminous Intensity Sensitivity. The quotient of output current by the incident luminous intensity, at constant electrode voltages.

Dynamic Sensitivity. The quotient of the modulated component of the electrical output by the modulated component of the incident radiation.

OPERATING CONSIDERATIONS

The *polarizing voltage* for the 6694-A may be applied without regard to polarity. To obtain the full sensitivity of the cell, it is essential that its entire photosensitive area be illuminated. Otherwise, a blocking action produced by the unilluminated area of the cell will occur and cause unsatisfactory operation.

SPECTRAL-SENSITIVITY CHARACTERISTIC
of Photoconductive Cell having S-12 Response
is shown at the front of this Section

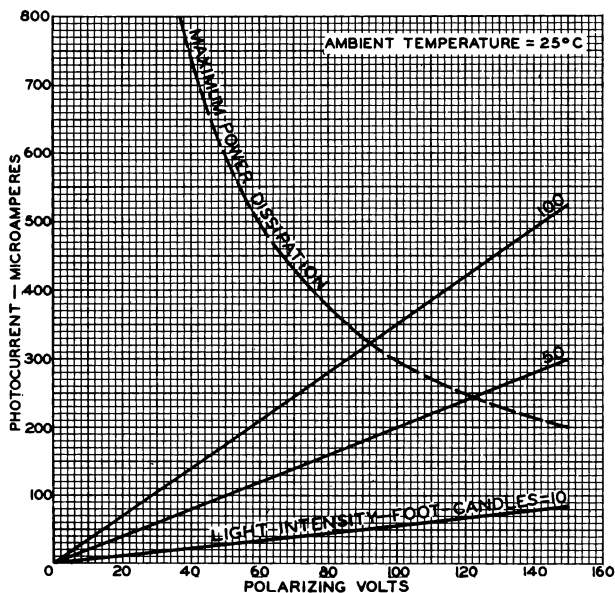




6694-A

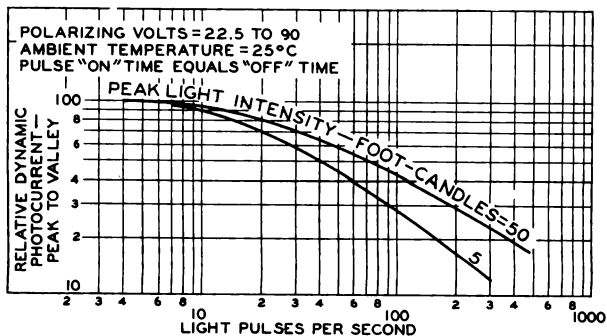
6694-A

AVERAGE CHARACTERISTICS



92CM-8583VI

DYNAMIC SENSITIVITY CHARACTERISTICS



TUBE DIVISION

92CM-8872V

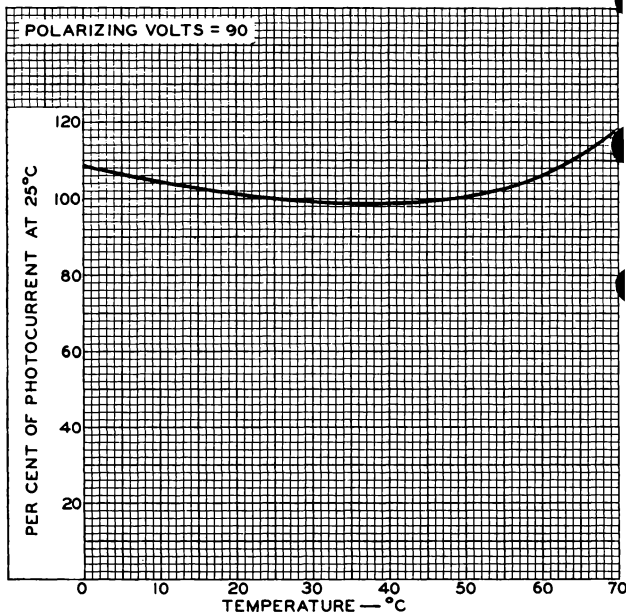
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6694-A

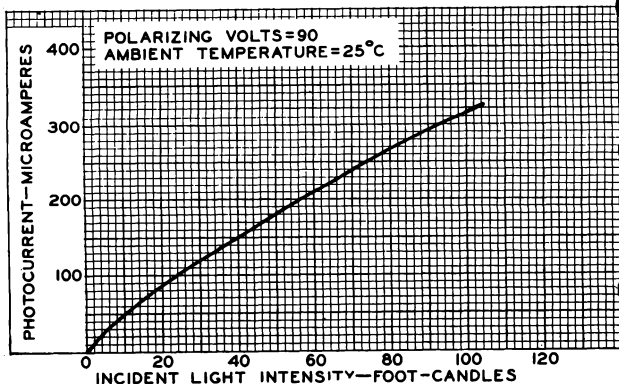


6694-A

TYPICAL CHARACTERISTICS



92CM-8585RI



TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

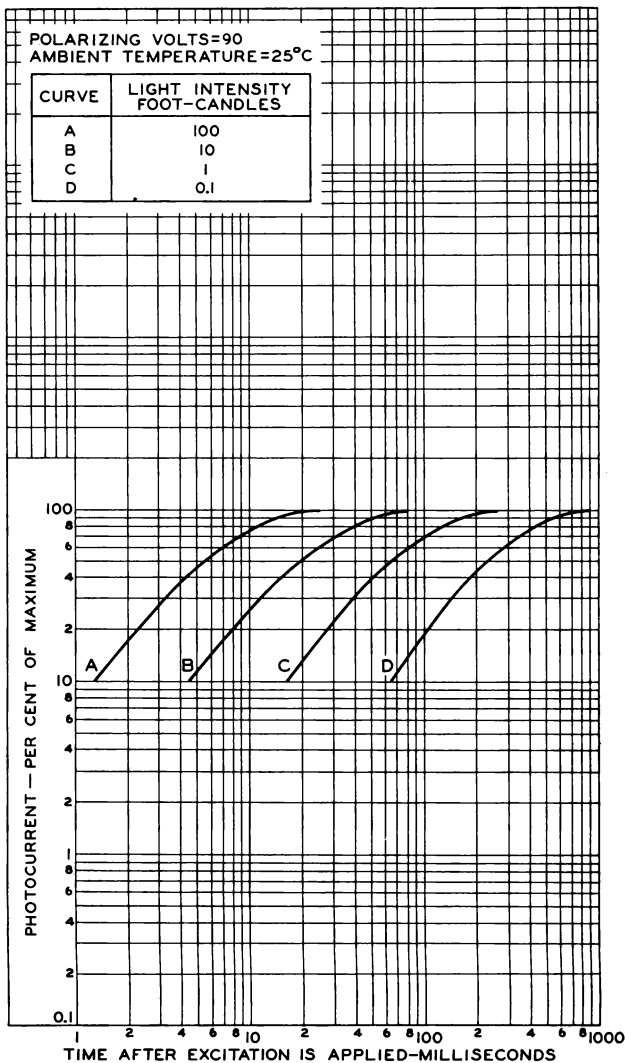
92CM-8584RI



6694-A

6694-A

TYPICAL RISE CHARACTERISTICS



6694-A



6694-A

TYPICAL DECAY CHARACTERISTICS

